THE COMMONWEALTH OF MASSACHUSETTS

ACCESS PERMIT PROJECT -
PLAN AND PROFILE OF

MONSIGNOR O'BRIEN HIGHWAY (ROUTE 28)

PHASE 2B

IN THE CITY OF

CAMBRIDGE

MIDDLESEX COUNTY

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

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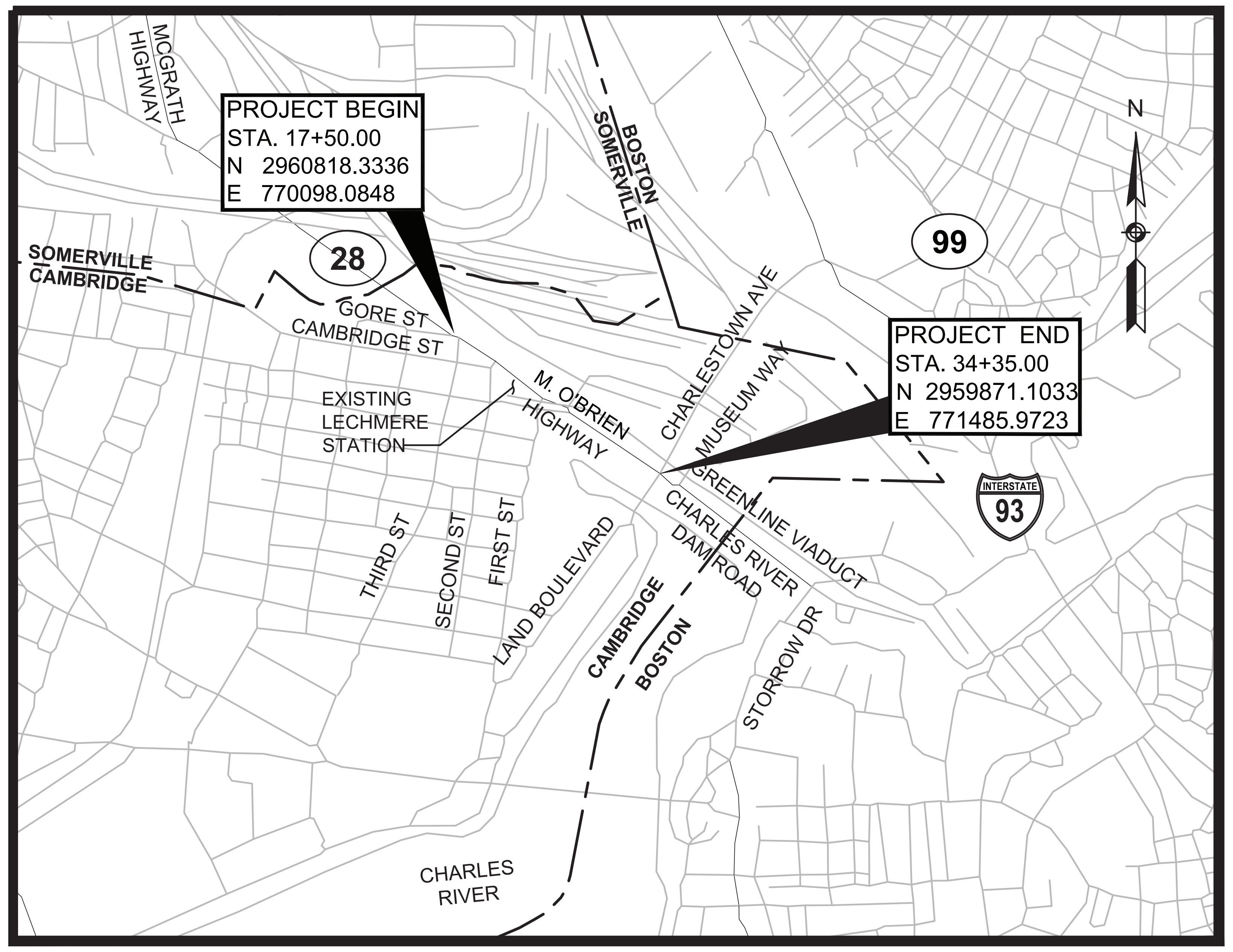

0 1000 2000 3000 4000
SCALE: 1" = 1000'

LENGTH OF PROJECT = 2,325 FEET = 0.44 MILES

FINAL DESIGN - PHASE 2B
JULY 14, 2021

REVISED NOVEMBER 22, 2021

DESIGN DESIGNATION

	O'BRIEN HIGHWAY (THIRD STREET TO WATER STREET)	O'BRIEN HIGHWAY (CAMBRIDGE STREET TO LAND BOULEVARD)
DESIGN SPEED	35 MPH	35 MPH
ADT (2012)	21,179	23,069
ADT (2022)	28,135	27,857
K	7%	6.8%
D	51.1% (SB)	50.7% (SB)
T (PEAK HOUR)	1.1%	0.6%
T (AVERAGE DAY)	0.9%	0.7%
DHV	1,966	1,904
DDHV	1,004	996
FUNCTIONAL CLASSIFICATION	PRINCIPAL ARTERIAL	PRINCIPAL ARTERIAL

DESIGN DESIGNATION

	CHARLES RIVER DAM ROAD (MUSEUM WAY TO DRAWBRIDGE)	CAMBRIDGE STREET (FIRST STREET TO O'BRIEN HIGHWAY)
DESIGN SPEED	35 MPH	30 MPH
ADT (2012)	29,453	9,434
ADT (2022)	37,630	13,152
K	6%	6.6%
D	53.0% (SB)	50.3% (WB)
T (PEAK HOUR)	0.2%	0.2%
T (AVERAGE DAY)	0.8%	0.3%
DHV	2,265	862
DDHV	1,201	434
FUNCTIONAL CLASSIFICATION	PRINCIPAL ARTERIAL	PRINCIPAL ARTERIAL

DATE	DESCRIPTION	REV #

ENGINEER DATE

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

DESIGNED BY KL/VL	APPROVED BY TBM	SHEET OF 1 120
DRAWN BY KL/VL	DFTG CHECKED BY KL/VL	VHB CAD FILE NAME 11554-COV.DWG
CHECKED BY SK/PN	DATE JULY 14, 2021	JOB NO. 11554.00

CAMBRIDGE
O'BRIEN HIGHWAY
LEGEND & ABBREVIATIONS
SHEET 02 OF 120

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
□ JB	□ JB	JERSEY BARRIER
CB	CB	CATCH BASIN
	CBCI	CATCH BASIN CURB INLET
	GI	GUTTER INLET
	GICI	GUTTER INLET CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
□ MB	□ MB	MAIL BOX
□	□	POST SQUARE
○	○	POST CIRCULAR
⊕ WELL	⊕ WELL	WELL
▫ EHH	▫ EHH	ELECTRIC HANDHOLE
○	○	FENCE GATE POST
○ GG	○ GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
□ CO.BD.		COUNTY BOUND
		GPS POINT
Ⓒ	Ⓒ	CABLE MANHOLE
Ⓓ	Ⓓ	DRAINAGE MANHOLE
Ⓔ	Ⓔ	ELECTRIC MANHOLE
Ⓖ	Ⓖ	GAS MANHOLE
Ⓜ	Ⓜ	MISC MANHOLE
Ⓢ	Ⓢ	SEWER MANHOLE
Ⓣ	Ⓣ	TELEPHONE MANHOLE
Ⓦ	Ⓦ	WATER MANHOLE
■ MHB	■ MHB	MASSACHUSETTS HIGHWAY BOUND
□ MON		MONUMENT
	▶	REDUCER
□ SB		STONE BOUND
■ TB		TOWN OR CITY BOUND
△		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
○ HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
•SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
○ WG	WG	WATER GATE
○ PM	○ PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
		HAY BALES/SILT FENCE
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
℄		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
Ø1	Ø1	CONTROLLER PHASE
□	□	WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		QUADRUPOLE WIRE LOOP DETECTOR
▨	▨	BICYCLE WIRE LOOP DETECTOR, TYPE B-2
		VIDEO DETECTION CAMERA
⊕		PEDESTRIAN PUSH BUTTON, SIGN AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD, WITH/WITHOUT BACKPLATE
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED, WITH/WITHOUT BACKPLATE
		FLASHING BEACON, WITH/WITHOUT BACKPLATE
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
○ TS	●	SIGNAL POST AND BASE
		MAST ARM, SHAFT AND BASE
		SIGN AND POST
		SIGN AND POST (2 POSTS)
⊤	⊤	OVERHEAD SIGN
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
▫	▪	PULL BOX 12"x12" (OR AS NOTED)
▭	▬	ELECTRIC HANDHOLE - SD2.022 (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	12" STOP LINE
	CW	12" CROSSWALK - WIDTH AS NOTED (SEE DETAIL ON SHEET 89)
	SWL	SOLID WHITE LINE - AS NOTED ON PLAN
	SYL	SOLID YELLOW LINE - AS NOTED ON PLAN
	BWL	BROKEN WHITE LINE - AS NOTED ON PLAN
	DWLEx	DOTTED WHITE LINE EXTENSION - AS NOTED ON PLAN
	DYLEx	DOTTED YELLOW LINE EXTENSION - AS NOTED ON PLAN
	DBYL	DOUBLE YELLOW LINE - AS NOTED ON PLAN
	SWCHL	SOLID WHITE CHANNELIZATION LINE
	SYCHL	SOLID YELLOW CHANNELIZATION LINE
	DWL	2' WIDE DASHED WHITE LINE - 2' WITH 2' GAP
		SHARROW
		BIKE STOP LINE LEGEND (SEE DETAIL ON SHEET 88)
		BIKE LANE MARKING (SEE DETAIL ON SHEET 88)
		TWO-STAGE QUEUE TURN BOX (SEE DETAIL ON SHEET 88)
		RAISED CROSSING MARKING LEGEND (SEE DETAIL ON SHEET 88)

PAVEMENT NOTE: ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED ON THE PLANS.

LIGHTING NOTES

POLE/HANDHOLE SCHEDULE

EX- ○	EXISTING POLE & FIXTURE/S
	NEW LOCATION OF EXISTING POST TOP ACORN
	NEW TYPE 'F' TWIN POLE & FIXTURES
	NEW LOCATION OF EXISTING TYPE 'A' POLE & FIXTURE

POLE/HANDHOLE LEGEND

① RELOCATE & REUSE EXISTING POLE IN NEW LOCATION SHOWN.

② LOCATION OF NEW HANDHOLE (SEE STD MASS DOT DETAIL)

③ EXISTING HANDHOLE COVERS TO BE RESET FLUSH WITH NEW FINISH GRADE.

④ REMOVE EXISTING HANDHOLE & INSTALL A NEW HEAVY DUTY 24"x 36" x 24" DEEP (ID) PRECAST CONCRETE HANDHOLE WITH H20 FRAME & COVER. CAPTURE EXISTING CONDUITS & PROVIDE NEW CONDUIT AS SHOWN TO RELOCATED HANDHOLE. REPLACE WIRE TO MATCH EXISTING BACK TO EXISTING TO REMAIN HANDHOLE.

⑤ EXISTING POLE & FIXTURE TO BE REMOVED & STOCKPILED FOR POSSIBLE REUSE.

FIXTURE SCHEDULE

EX-A	EXISTING LED FIXTURE (SEE DETAIL)
EX-B	EXISTING HPS FIXTURE (TO BE RETROFITTED WITH LED PACKAGE TO MATCH EXISTING TYPE 'A')
EX-C	EXISTING HPS ACORN POST TOP
EX-D	EXISTING LED FIXTURE WITH 2 HEADS @90 (SEE DETAIL)
EX-E	EXISTING COBRA HEAD STREET FIXTURE
F	NEW LED FIXTURE WITH 2 HEADS @180 (TO MATCH EXISTING, SEE DETAIL)
G	EXISTING TO BE REUSED TYPE 'A' POLE & FIXTURE

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC (or BOC)	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CS	COMBINED SEWER
CSMH	COMBINED SEWER MANHOLE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY (or DRIVE)	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FES	FLARED END SECTION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HP & LP	HIGH & LOW POINT
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION

ABBREVIATIONS (cont.)

GENERAL

PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
RB	ROADWAY BUFFER
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SBL	SEPARATED BIKE LANE
SHLD	SHOULDER
SMH	SEWER MANHOLE
SOE	SUPPORT OF EXCAVATION
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW (or WALK)	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC (or TOC)	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
←FR	FLASHING RED LEFT ARROW
FR→	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
←FY	FLASHING YELLOW LEFT ARROW
FY→	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
←G	STEADY GREEN LEFT ARROW
G→	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
↑G	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
←R	STEADY RED LEFT ARROW
R→	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
Y	STEADY CIRCULAR YELLOW
←Y	STEADY YELLOW LEFT ARROW
Y→	STEADY YELLOW RIGHT ARROW

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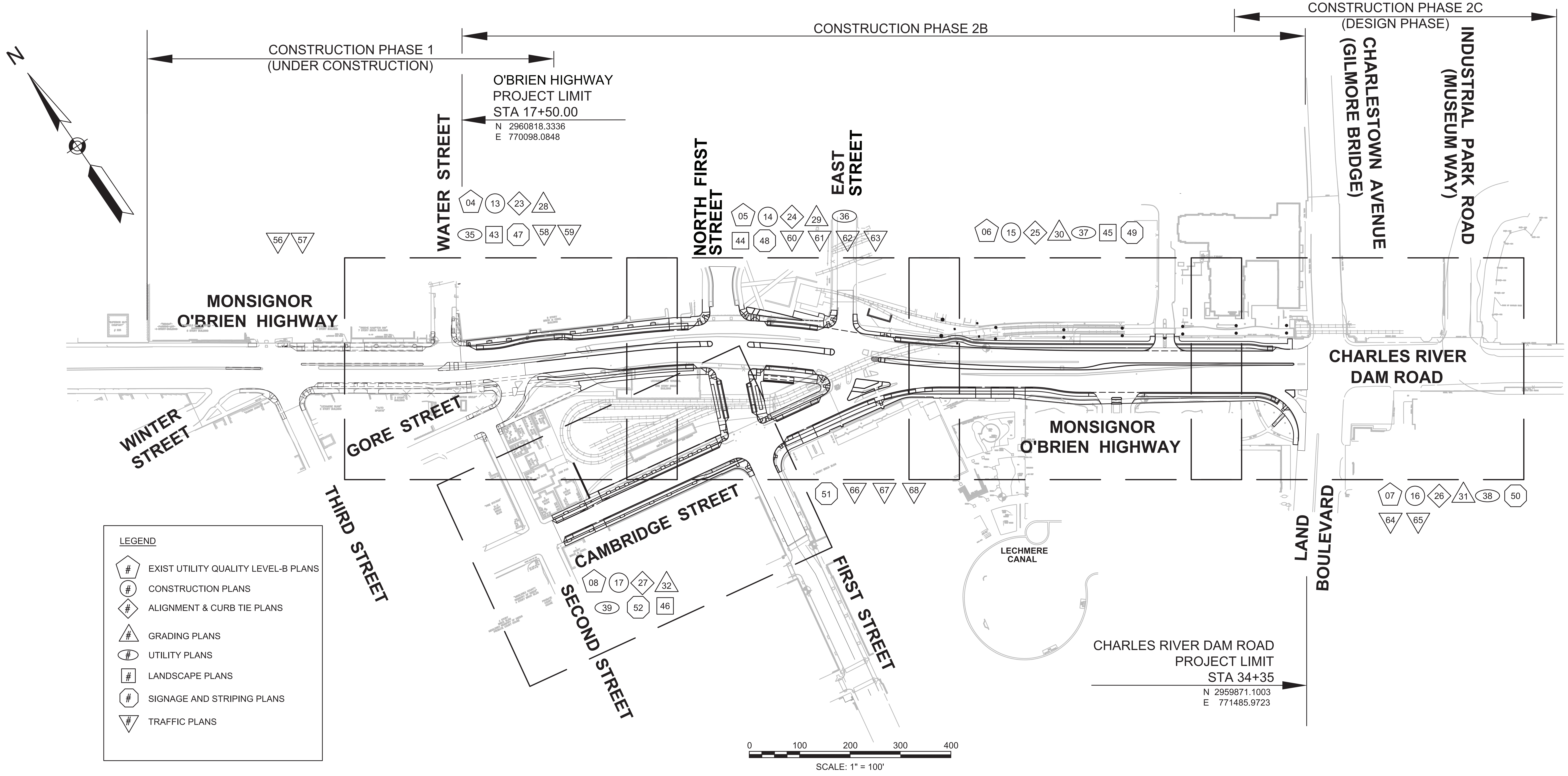
GENERAL NOTES

1. TOPOGRAPHICAL INFORMATION FROM A SURVEY BY GUNTHER ENGINEERING, INC. BOSTON, MASSACHUSETTS CONDUCTED IN JULY 2001 (AERIAL FLIGHT BY LOCKWOOD MAPPING) AND AUGUST 2006 AND SUPPLEMENTED BY VANASSE HANGEN BRUSTLIN, INC. BETWEEN THE DATES OF NOVEMBER, 2012 AND MARCH, 2017.
2. HORIZONTAL DATUM IS BASED ON MASS GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN REFER TO CITY OF CAMBRIDGE DATUM.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT DIGSAFE TO REQUEST EXISTING UTILITY MARKOUT IN THE FIELD.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER, SEWER, AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
7. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
8. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
9. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
10. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE REMOVED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
11. ALL LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
12. ALL EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
13. EXISTING STATE AND CITY LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.
14. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE STRUCTURES AND PIPES. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED.
15. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION OPERATIONS WITH THE MBTA BUS AND GREEN LINE OPERATIONS DURING CONSTRUCTION.
16. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS. THE CONTRACTOR SHALL USE PEDESTRAIN GUIDANCE SYSTEMS AT WORK ZONES.
17. THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS SHALL BE SEVEN (7) FEET UNLESS OTHERWISE SHOWN ON THE PLANS.

CAMBRIDGE
O'BRIEN HIGHWAY
KEY PLAN & GENERAL NOTES
SHEET 03 OF 120



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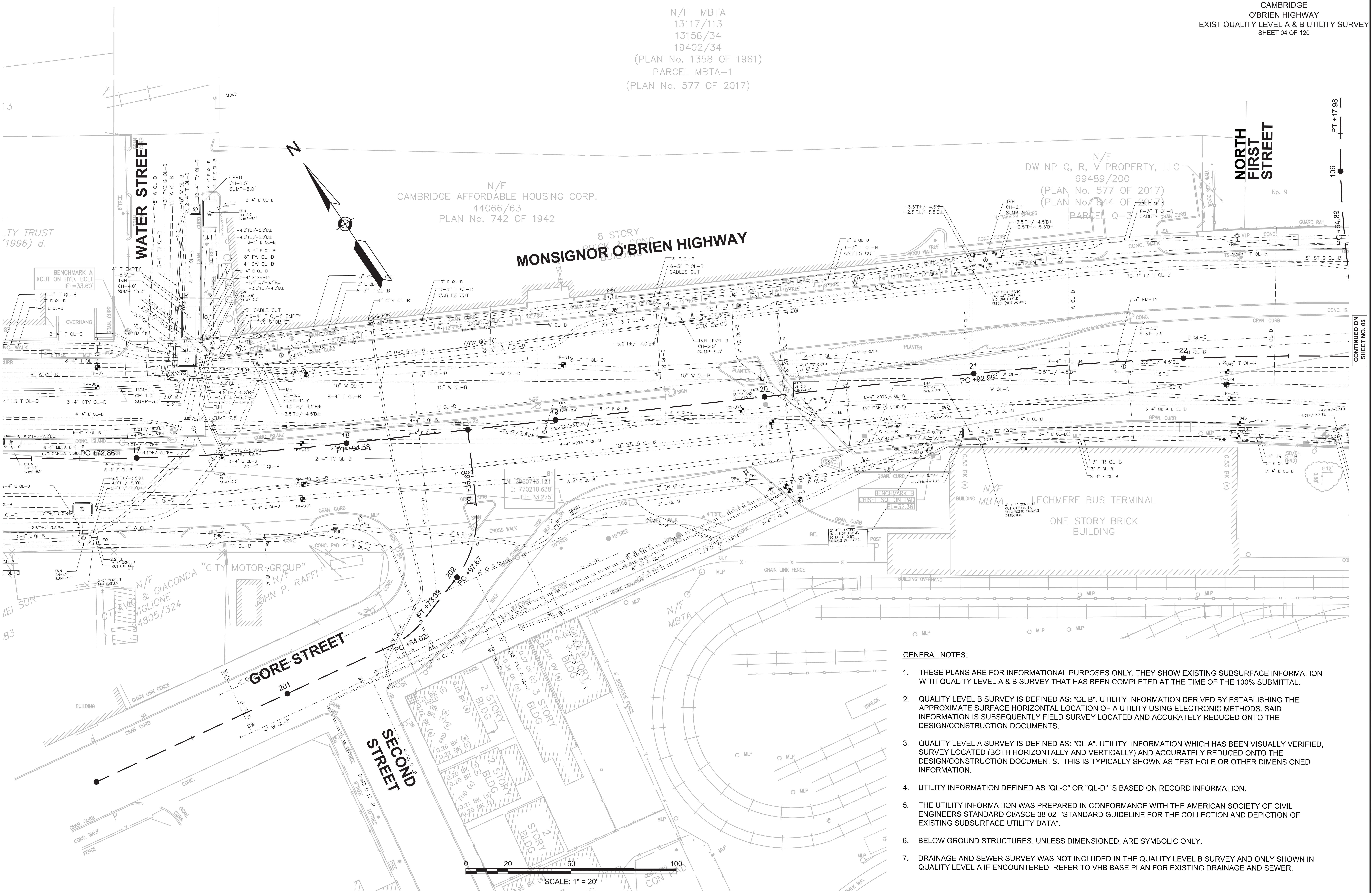

GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.
2. QUALITY LEVEL B SURVEY IS DEFINED AS: "QL B". UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.
3. QUALITY LEVEL A SURVEY IS DEFINED AS: "QL A". UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.
4. UTILITY INFORMATION DEFINED AS "QL-C" OR "QL-D" IS BASED ON RECORD INFORMATION.
5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD CI/ASCE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
6. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.
7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.

CAMBRIDGE
O'BRIEN HIGHWAY
EXIST QUALITY LEVEL A & B UTILITY SURVEY
SHEET 05 OF 120

Plotted on 13-Jul-2021 11:44 AM

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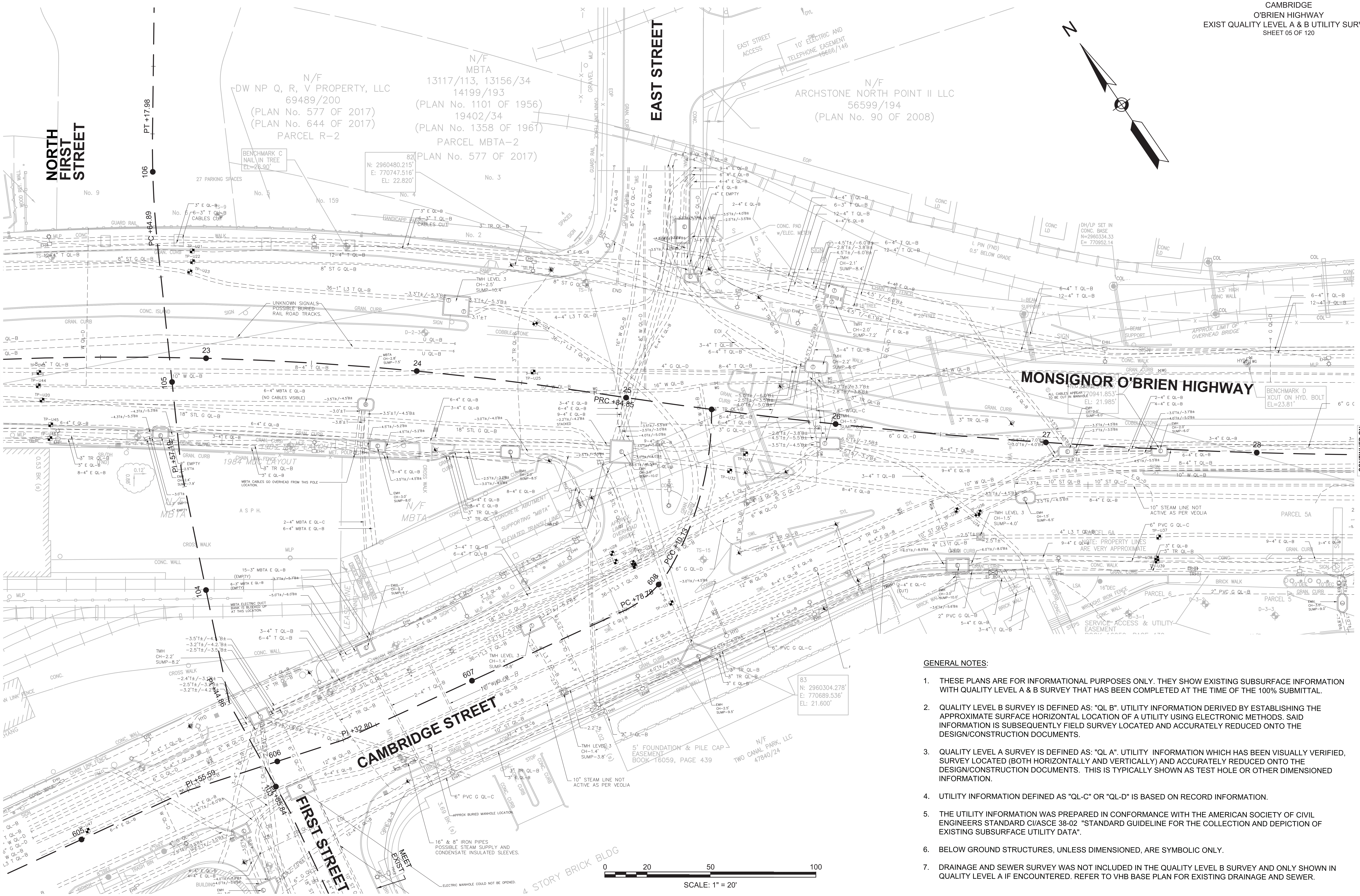

N
NORTH FIRST STREET
EAST STREET
MONSIGNOR O'BRIEN HIGHWAY
CAMBRIDGE STREET
FIRST STREET
N/F DW NP Q, R, V PROPERTY, LLC 69489/200 (PLAN No. 577 OF 2017) (PLAN No. 644 OF 2017) PARCEL R-2
N/F MBTA 13117/113, 13156/34 14199/193 (PLAN No. 1101 OF 1956) 19402/34 (PLAN No. 1358 OF 1961) PARCEL MBTA-2 (PLAN No. 577 OF 2017)
N/F ARCHSTONE NORTH POINT II LLC 56599/194 (PLAN No. 90 OF 2008)
N/F TWO CANAL PARK, LLC 47840/24
N/F MBTA
BENCHMARK C NAIL IN TREE EL=26.90'
82 N: 2960480.215' E: 770747.516' EL: 22.820'
83 N: 2960304.278' E: 770689.536' EL: 21.600'
BENCHMARK D XCUT ON HYD. BOLT EL=23.81'
DH/LP SET IN CONC. BASE N=2960334.33 E= 770952.14
PT +17.98
PC +64.89
PRC +84.85
PCC +10.15
PC +78.79
PI +57.19
PI +14.86
PI +32.80
PI +55.59
23
24
25
26
27
28
104
105
106
605
606
607
608
UNKNOWN SIGNALS POSSIBLE BURIED RAIL ROAD TRACKS.
MBTA CABLES GO OVERHEAD FROM THIS POLE LOCATION.
MBTA ELECTRIC DUCT BANK IS BLOCKED UP AT THIS LOCATION.
CONCRETE ABUTMENT SUPPORTING "MBTA" ELEVATED TRANSIT LINE
10" STEAM LINE NOT ACTIVE AS PER VEOLIA
5' FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
16" & 8" IRON PIPES POSSIBLE STEAM SUPPLY AND CONDENSATE INSULATED SLEEVES.
APPROX BURIED MANHOLE LOCATION
ELECTRIC MANHOLE COULD NOT BE OPENED.
NOTE: PROPERTY LINES ARE VERY APPROXIMATE
SERVICE ACCESS & UTILITY EASEMENT
10' ELECTRIC AND TELEPHONE EASEMENT 15666/146
EAST STREET ACCESS
APPROX. LIMIT OF OVERHEAD BRIDGE
4 STORY BRICK BLDG
MEET EXIST
1984 MDC LAYOUT
PARCEL 5A
PARCEL 6
PARCEL 5
27 PARKING SPACES

CONTINUED ON SHEET NO. 04

CONTINUED ON SHEET NO. 06

CONTINUED ON SHEET NO. 08

CONTINUED ON SHEET NO. 08

0 20 50 100
SCALE: 1" = 20'

GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.
2. QUALITY LEVEL B SURVEY IS DEFINED AS: "QL B". UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.
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5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD CI/ASCE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
6. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.
7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.

CAMBRIDGE
O'BRIEN HIGHWAY
EXIST QUALITY LEVEL A & B UTILITY SURVEY
SHEET 06 OF 120

MONSIGNOR O'BRIEN HIGHWAY
GHWAY
N
N/F ARCHSTONE NORTH POINT II LLC 56009/206 (PLAN No. 90 OF 2008)
N/F 56009/206 (PLAN No. 90 OF 2008) ARCHSTONE NORTH POINT II LLC
PARTY WALL AGREEMENT 13309/47 13309/52
CENTER 12" PARTY WALL
PLAN 1415 OF 1964
M.B.T.A. EASEMENT - VIADUCT
LOADING / TOW ZONE
GRASS
LANDSCAPING
BLUE STONE PATIO
CRUSHED STONE
DRAIN AND SEWER 13302/4
TRACK RIGHTS 10721/201
BENCHMARK D XCUT ON HYD. BOLT EL=23.81'
BENCHMARK E XCUT ON HYD. BOLT EL=24.38'
PT +71.99
28
29
30
31
32
33
34
10" STEAM LINE NOT ACTIVE AS PER VEOLIA
PARCEL 5A
PARCEL 5
PARCEL 4
N/F CITY OF CAMBRIDGE
20 N: 2960166.794' E: 770937.499' EL: 21.81'
N: 2960081.593' EL: 20.845'
87 N: 2959841.308' E: 771456.012' EL: 26.929'
CANOPY EASEMENT BOOK 18829, PAGE 424
CONC. PAD w/TRAN.
ELECTRIC TRANSFORMER
BUILDING FF=25.66'
0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 05

CONTINUED ON SHEET NO. 07

GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.

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5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD CI/ASCE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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CAMBRIDGE
O'BRIEN HIGHWAY
EXIST QUALITY LEVEL A & B UTILITY SURVEY
SHEET 07 OF 120

CHARLESTOWN AVENUE
INDUSTRIAL PARK ROAD
CHARLES RIVER DAM ROAD
LAND BOULEVARD
N
N/F MASSACHUSETTS COMMONWEALTH OF COMMISSION METROPOLITAN DISTRICT DOC. No. 498321
N/F COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 498321
N/F MASSACHUSETTS COMMONWEALTH OF DOC. No. 662950 DEPARTMENT OF PUBLIC WORKS
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F OF COMMONWEALTH MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 531451
N/F CITY OF CAMBRIDGE
BENCHMARK F CHISEL SQ. ON WALL EL=30.14'
BENCHMARK G CHISEL SQ. ON PAD EL=26.24'
89 N: 2959731.134' E: 771792.827' EL: 25.465'
BF#1-105
BF#1-106
BF#1-107
BF#1-108
BANK OF CHARLES RIVER
CONCRETE ABUTMENT SUPPORTING MBTA ELEVATED TRANSIT LINE
BRIDGE ARCH
CHAIN LINK FENCE
CONC. WALK
GRAN. CURB
CONC. WALL w/CHAIN LINK FENCE
DRAIN AND SEWER EASEMENT 13302/486
MAXIMUM BUILDING HEIGHT - 150 FEET
BUILDING HEIGHT REGULATION LINE
PERPETUAL RIGHT 12222/250
CONC. RET. WALL
LANDSCAPING
GRANITE WALL
AIR SHAFT
WALL w/FENCE
COBBLESTONE
GUARD RAIL
SIGN
ADA
PED
HYD
DH
TS
CONC.
BIT. WALK
BRICK WALL
EDGE PAVE.
AC UNIT
SB/DH (FND-HELD)
SB/DH (FND)
CONC. PAD w/TRAFF. BOX
TRAFF. BOXES
WATER LINE IS QL-D NO ELECTRONIC SIGNALS DETECTED.
8"DEC
6"DEC
12"DEC
20"DEC
24"DEC
15"DEC
16"DEC
10"PINE
15"PINE
12"PINE
6-4" T QL-B
4" E QL-B
2-4" T QL-B
6" G QL-D
8" G QL-B
10" G QL-D
3-4" E QL-B
8" W QL-B
10" ST QL-B
8-4" E QL-B
4" L3 T QL-B
8" W QL-D
4" T QL-B
4" TR QL-B
6" W QL-B
2-8" PTC 115KV E QL-B
4-4" E QL-B
12-4" E QL-B
34
35
36
37
38
39
CONTINUED ON SHEET NO. 06
BLES APPEAR CUT IN MANHOLE

GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.
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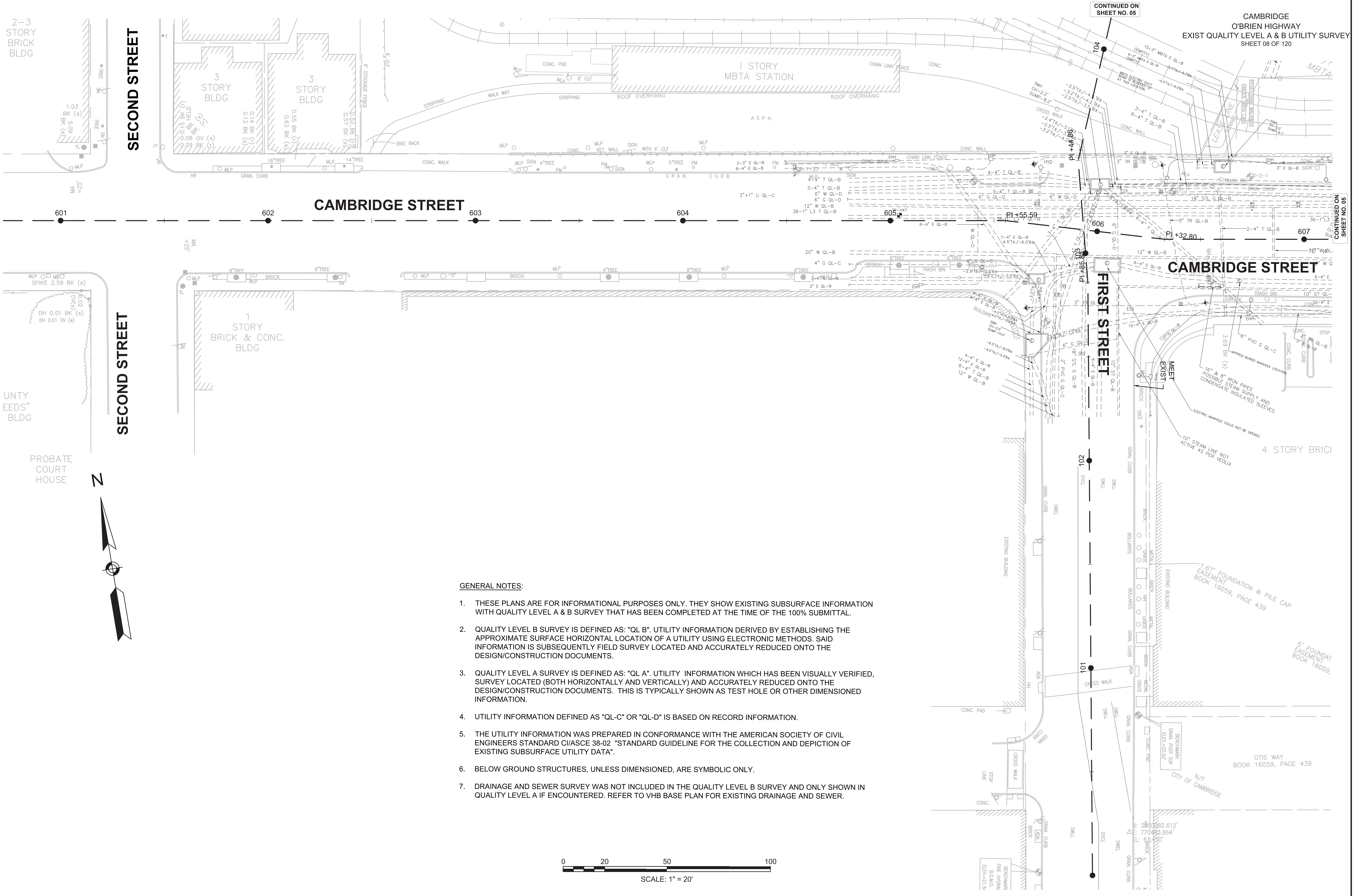
7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.

0 20 50 100
SCALE: 1" = 20'

CAMBRIDGE
O'BRIEN HIGHWAY
EXIST QUALITY LEVEL A & B UTILITY SURVEY
SHEET 08 OF 120



GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.
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0 20 50 100
SCALE: 1" = 20'

Plotted on 13-Jul-2021 11:44 AM
11554-BSI EXIST UTIL.DWG

CAMBRIDGE
O'BRIEN HIGHWAY
TYPICAL SECTIONS & PAVEMENT NOTES
SHEET 09 OF 120

11554-TYP.DWG
Plotted on 13-Jul-2021 11:45 AM

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5) WITH PG 64-28 OR LATEX MODIFIED EQUIVALENT

INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)

BASE: 4" SUPERPAVE BASE COURSE - 37.5mm (SBC-37.5)

SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER 8" GRAVEL BORROW, TYPE b

PROPOSED PAVEMENT MILL & OVERLAY - TYPE 1

SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5) WITH PG 64-28 OR LATEX MODIFIED EQUIVALENT

INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)

LEVELING COURSE: VARIABLE DEPTH SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)

MILLING: MICROMILL 4.0" (TYP)*

PROPOSED FULL DEPTH PAVEMENT LESS THAN 4.0' IN WIDTH

SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5) WITH PG 64-28 OR LATEX MODIFIED EQUIVALENT

INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)

BASE: 8" HIGH EARLY STRENGTH CEMENT CONCRETE

SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED PAVEMENT MILL & OVERLAY - TYPE 2

SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5) WITH PG 64-28 OR LATEX MODIFIED EQUIVALENT

MILLING: MICROMILL 1.75" (TYP)*

PROPOSED CEMENT CONCRETE - WALK / WHEELCHAIR RAMP / MEDIAN /ROADWAY BUFFER (RB) / SIDEWALK BUFFER

SURFACE: 4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED HOT MIX ASPHALT DRIVEWAY / SIDEWALK

SURFACE: 1.5" SUPERPAVE SURFACE COURSE - 9.5mm (SSC-9.5)

INTERMEDIATE: 2.5" SUPERPAVE INTERMEDIATE COURSE - 12.5mm (SIC-12.5)

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED BRICK BUFFER

SURFACE: 2¼" BRICK

INTERMEDIATE: 1" SAND SETTING BED

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE - DRIVEWAY

SURFACE: 6" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED HOT MIX ASPHALT - SEPARATED BIKE LANE (SBL)

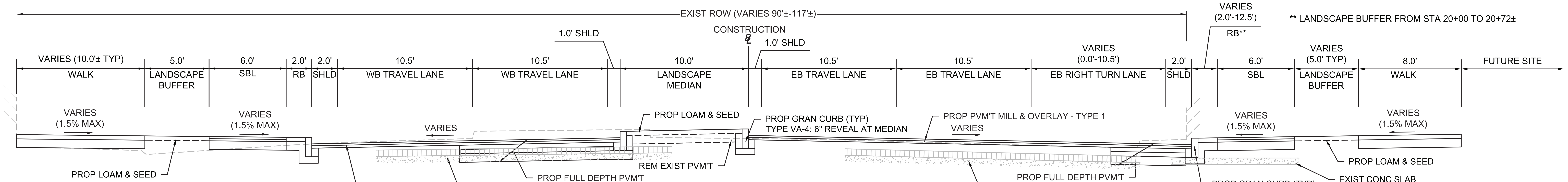
SURFACE: 2" SUPERPAVE SURFACE COURSE - 9.5mm (SSC-9.5)

INTERMEDIATE: 2" SUPERPAVE INTERMEDIATE COURSE - 12.5mm (SIC-12.5)

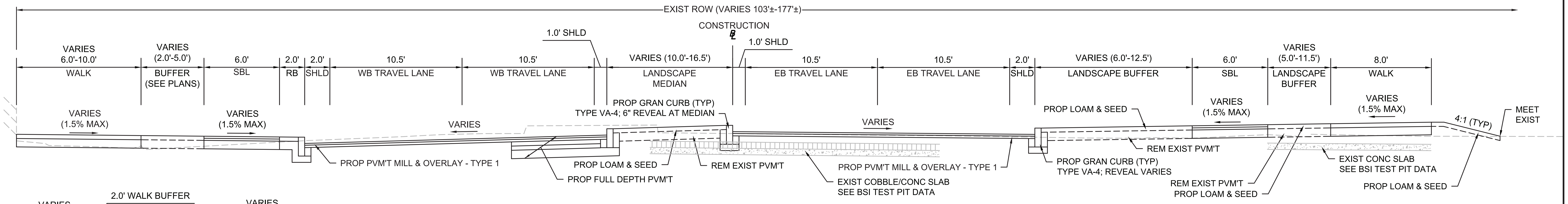
FOUNDATION: 8" GRAVEL BORROW, TYPE b

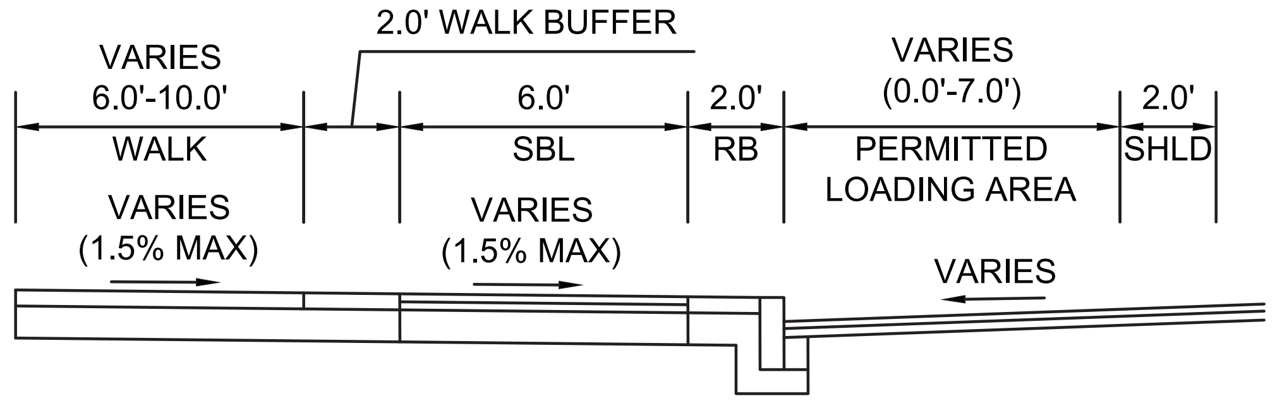
GENERAL NOTES:

1. ALL 12.5mm SUPERPAVE SURFACE COURSE (SSC-12.5) SHALL BE LATEX MODIFIED. ALL SUPERPAVE HMA MIXTURES SHALL INCLUDE WARM MIX ASPHALT.
2. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT 0.07 GAL/SY TO MILLED SURFACES AND 0.05 GAL/SY TO SMOOTH SURFACES PRIOR TO PAVING.
3. HOT POUR JOINT SEALANT SHALL BE APPLIED TO ALL SURFACE COURSE COLD JOINTS PRIOR TO PAVING.



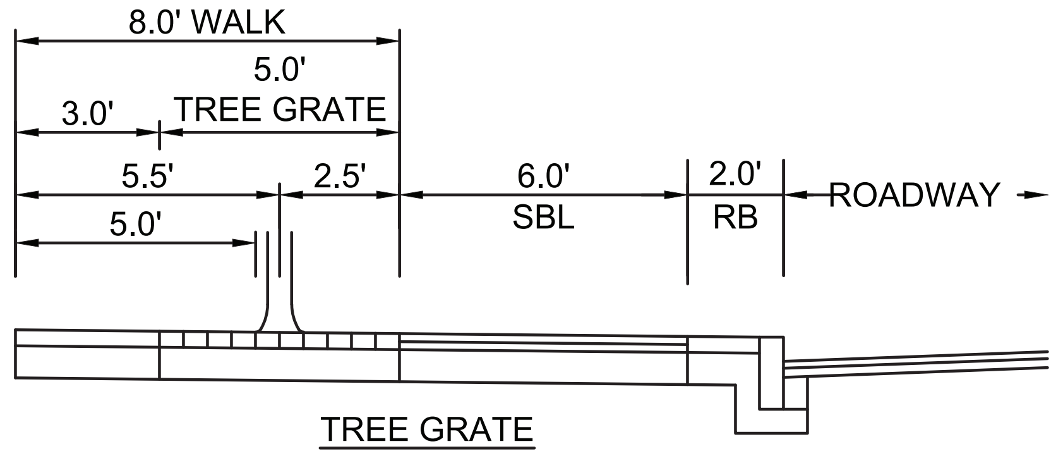
TYPICAL SECTION
O'BRIEN HIGHWAY (ROUTE 28)
STA 20+00± TO STA 22+50±
NTS



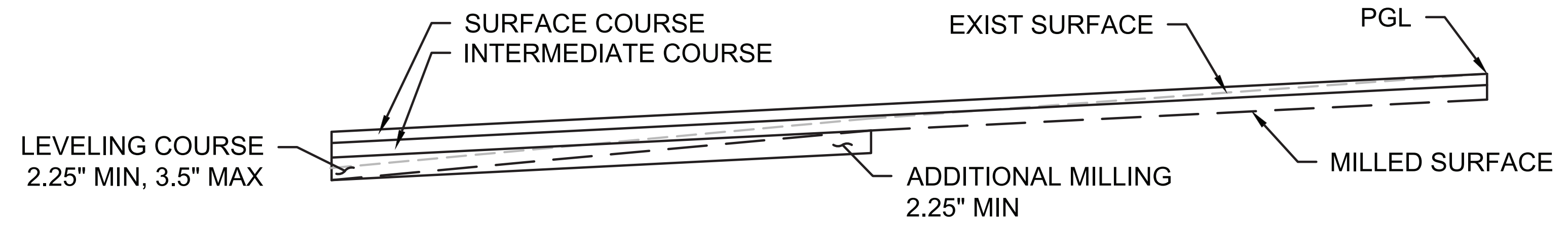


PERMITTED LOADING AREA
O'BRIEN HIGHWAY (ROUTE 28)
STA 18+30± TO 19+90±
NTS

TYPICAL SECTION
O'BRIEN HIGHWAY (ROUTE 28)
STA 17+50± TO STA 20+00±
NTS



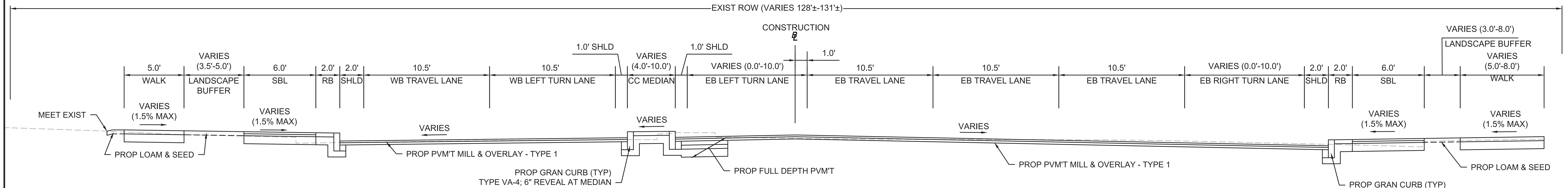
TREE GRATE
NTS


SURFACE COURSE
INTERMEDIATE COURSE
EXIST SURFACE
PGL
LEVELING COURSE 2.25" MIN, 3.5" MAX
ADDITIONAL MILLING 2.25" MIN
MILLED SURFACE

ADDITIONAL MILLING FOR LEVELING COURSE
NTS

* DEPTH OF MICROMILL IS VARIABLE. THE CONTRACTOR SHALL COMPARE EXISTING PAVEMENT ELEVATIONS AGAINST PROPOSED ELEVATIONS TO CONFIRM DEPTHS.

CAMBRIDGE
O'BRIEN HIGHWAY
TYPICAL SECTIONS & PAVEMENT NOTES
SHEET 10 OF 120



TYPICAL SECTION
O'BRIEN HIGHWAY (ROUTE 28)
STA 30+00± TO STA 34+00±
NTS

TYPICAL SECTION
O'BRIEN HIGHWAY (ROUTE 28)
STA 27+50± TO STA 29+00±
NTS

TYPICAL SECTION
O'BRIEN HIGHWAY (ROUTE 28)
STA 25+50± TO STA 26+90±
NTS

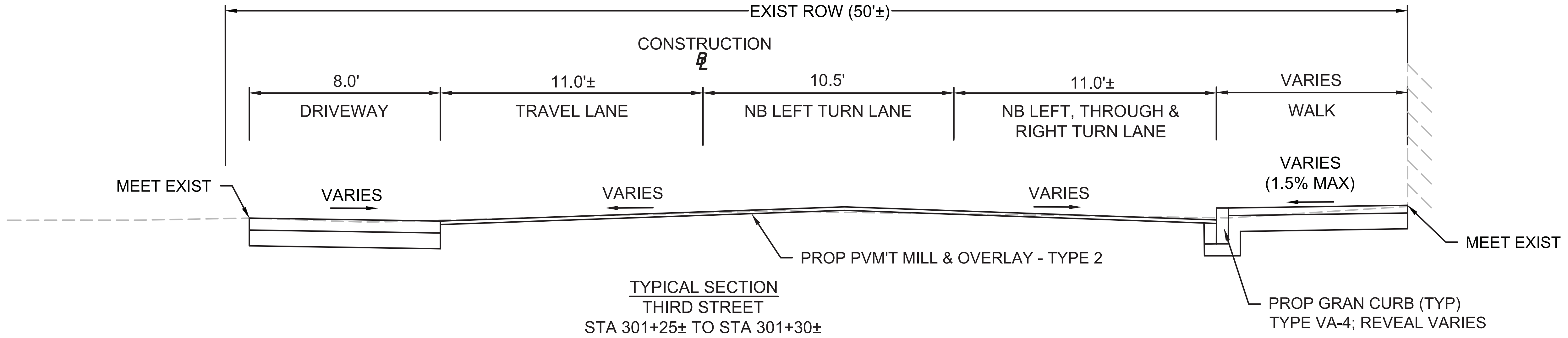
TYPICAL SECTION
O'BRIEN HIGHWAY (ROUTE 28)
STA 23+20± TO STA 25+00±
NTS

NOTE: SEE SHEET 09 FOR PAVEMENT NOTES

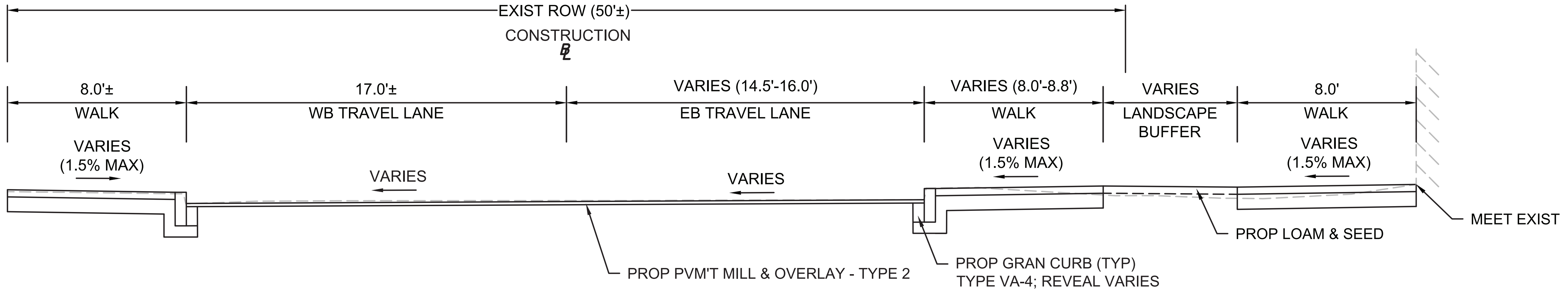
* DEPTH OF MICROMILL IS VARIABLE. THE CONTRACTOR SHALL COMPARE EXISTING PAVEMENT ELEVATIONS AGAINST PROPOSED ELEVATIONS TO CONFIRM DEPTHS.

11554-TYP.DWG   Plotted on 13-Jul-2021 11:45 AM

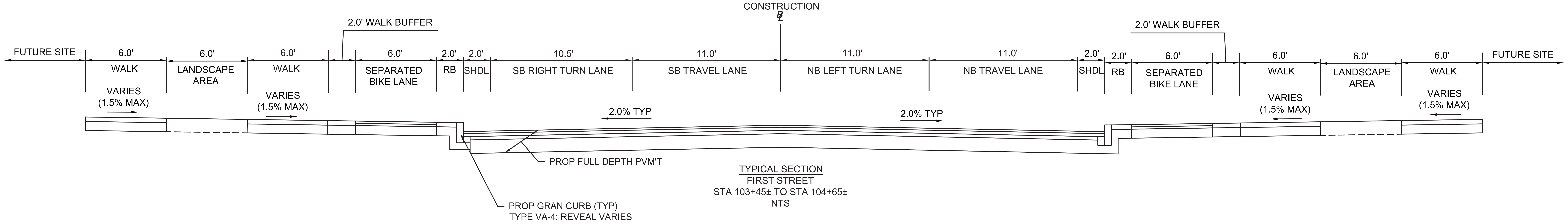
CAMBRIDGE
O'BRIEN HIGHWAY
TYPICAL SECTIONS & PAVEMENT NOTES
SHEET 11 OF 120



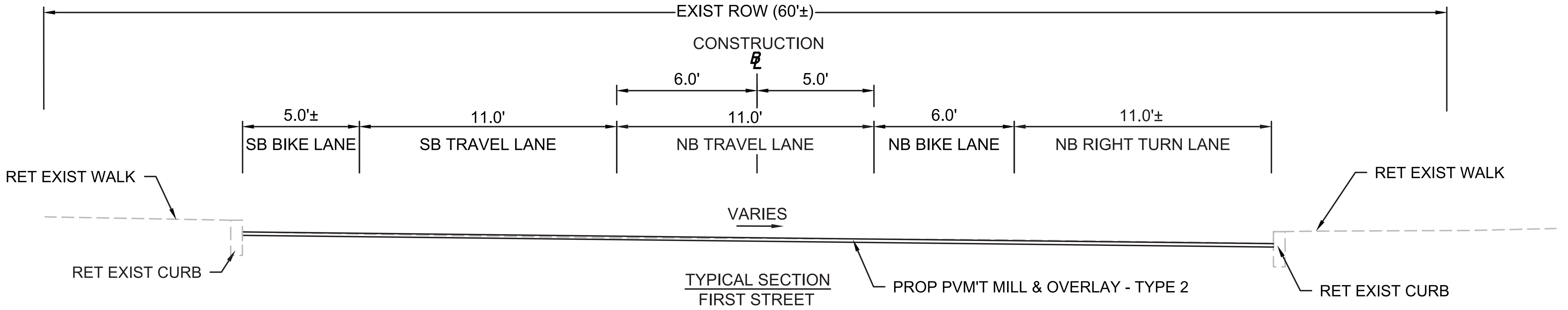
TYPICAL SECTION
THIRD STREET
STA 301+25± TO STA 301+30±
NTS



TYPICAL SECTION
GORE STREET
STA 201+00± TO STA 202+00±
NTS



TYPICAL SECTION
FIRST STREET
STA 103+45± TO STA 104+65±
NTS



TYPICAL SECTION
FIRST STREET
STA 101+00± TO STA 102+35±
NTS

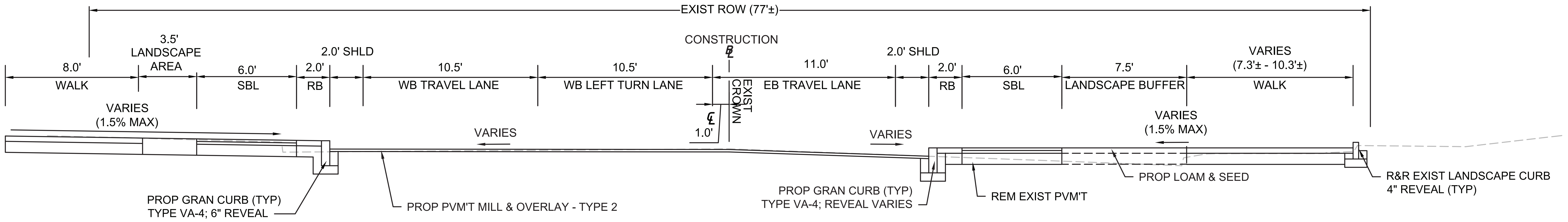
NOTE: SEE SHEET 09 FOR PAVEMENT NOTES

* DEPTH OF MICROMILL IS VARIABLE. THE CONTRACTOR SHALL COMPARE EXISTING PAVEMENT ELEVATIONS AGAINST PROPOSED ELEVATIONS TO CONFIRM DEPTHS.

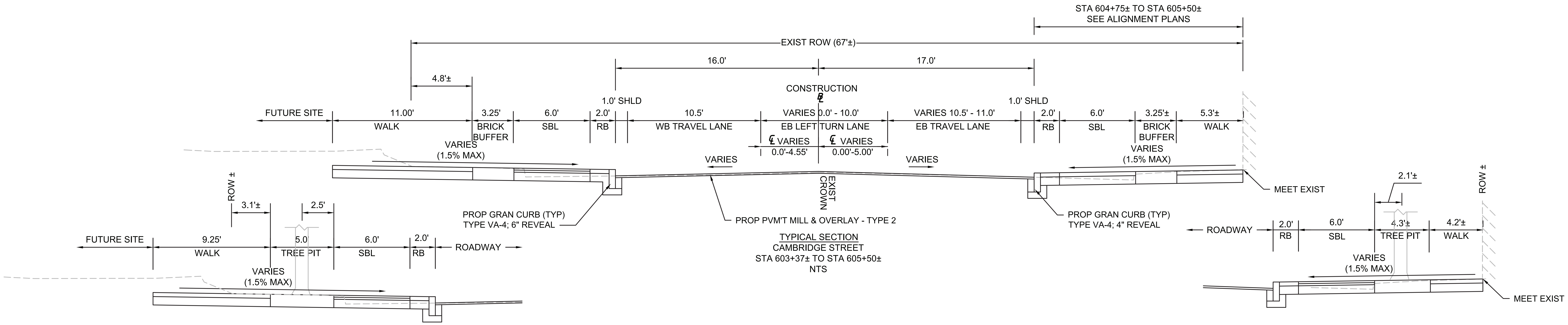
CAMBRIDGE
O'BRIEN HIGHWAY
TYPICAL SECTIONS & PAVEMENT NOTES
SHEET 12 OF 120

Plotted on 13-Jul-2021 11:45 AM

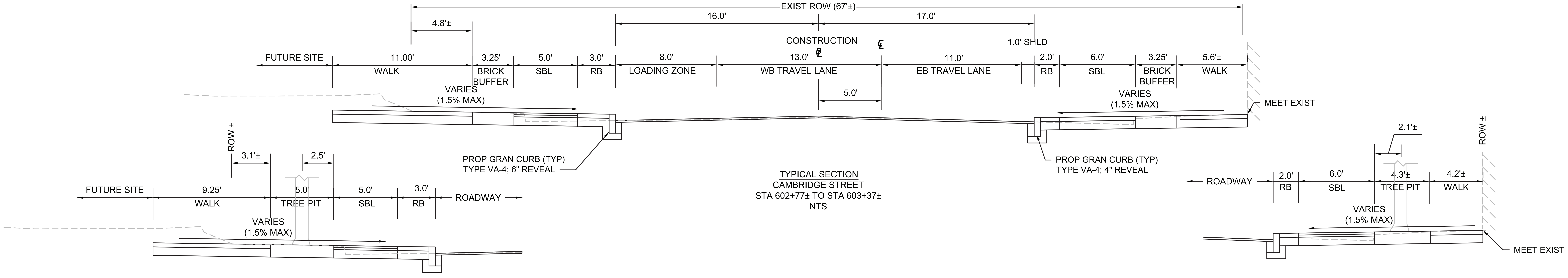
11554-TYP.DWG



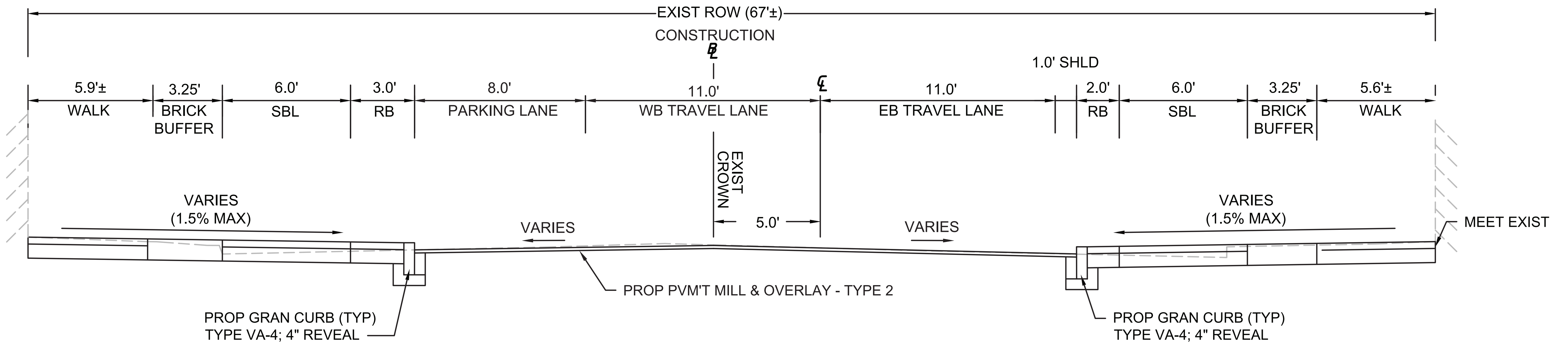
TYPICAL SECTION
CAMBRIDGE STREET
STA 606+50± TO STA 608+00±
NTS



TYPICAL SECTION
CAMBRIDGE STREET
STA 603+37± TO STA 605+50±
NTS

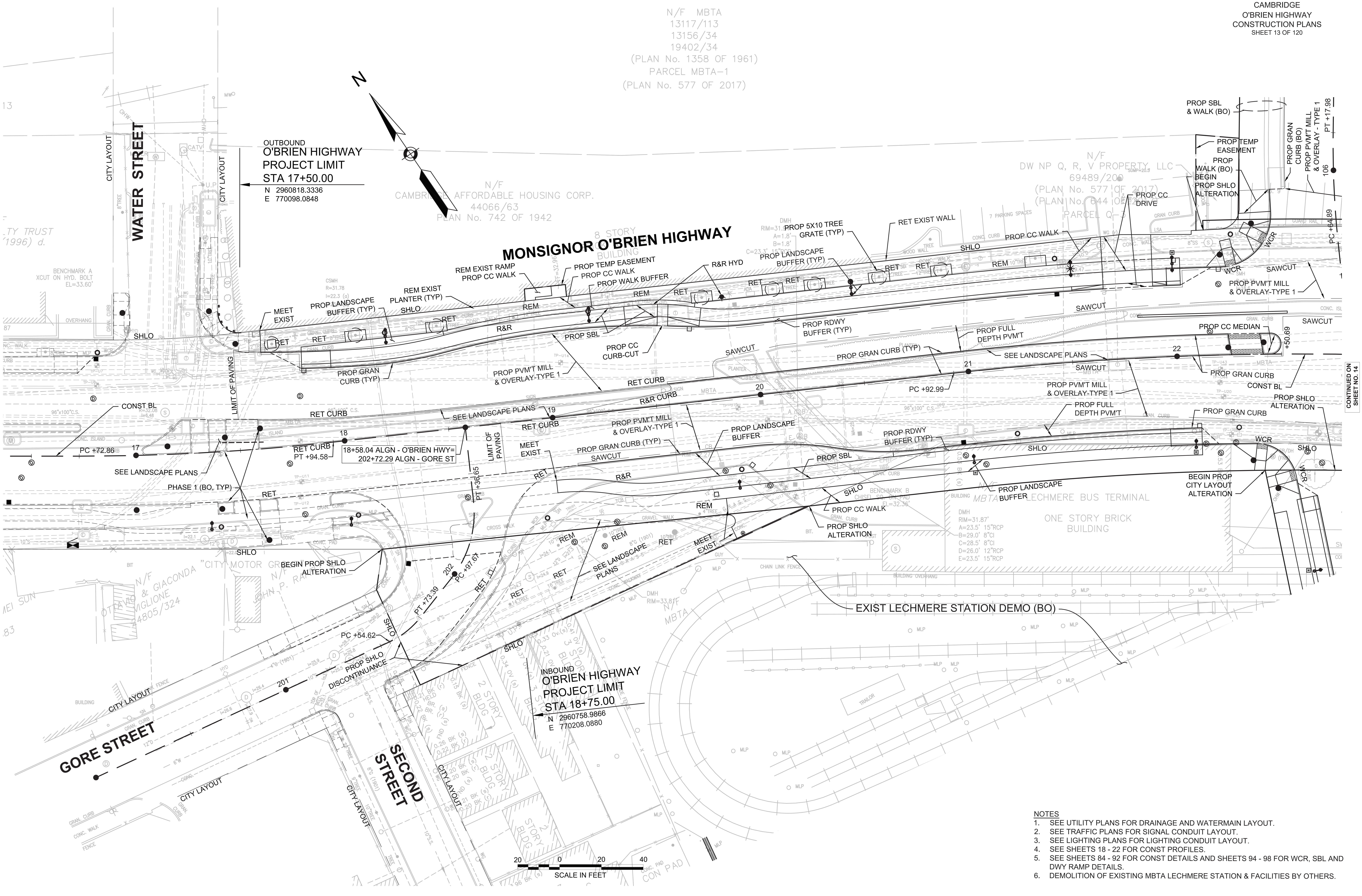


TYPICAL SECTION
CAMBRIDGE STREET
STA 602+77± TO STA 603+37±
NTS



TYPICAL SECTION
CAMBRIDGE STREET
STA 601+70± TO STA 602+77±
NTS

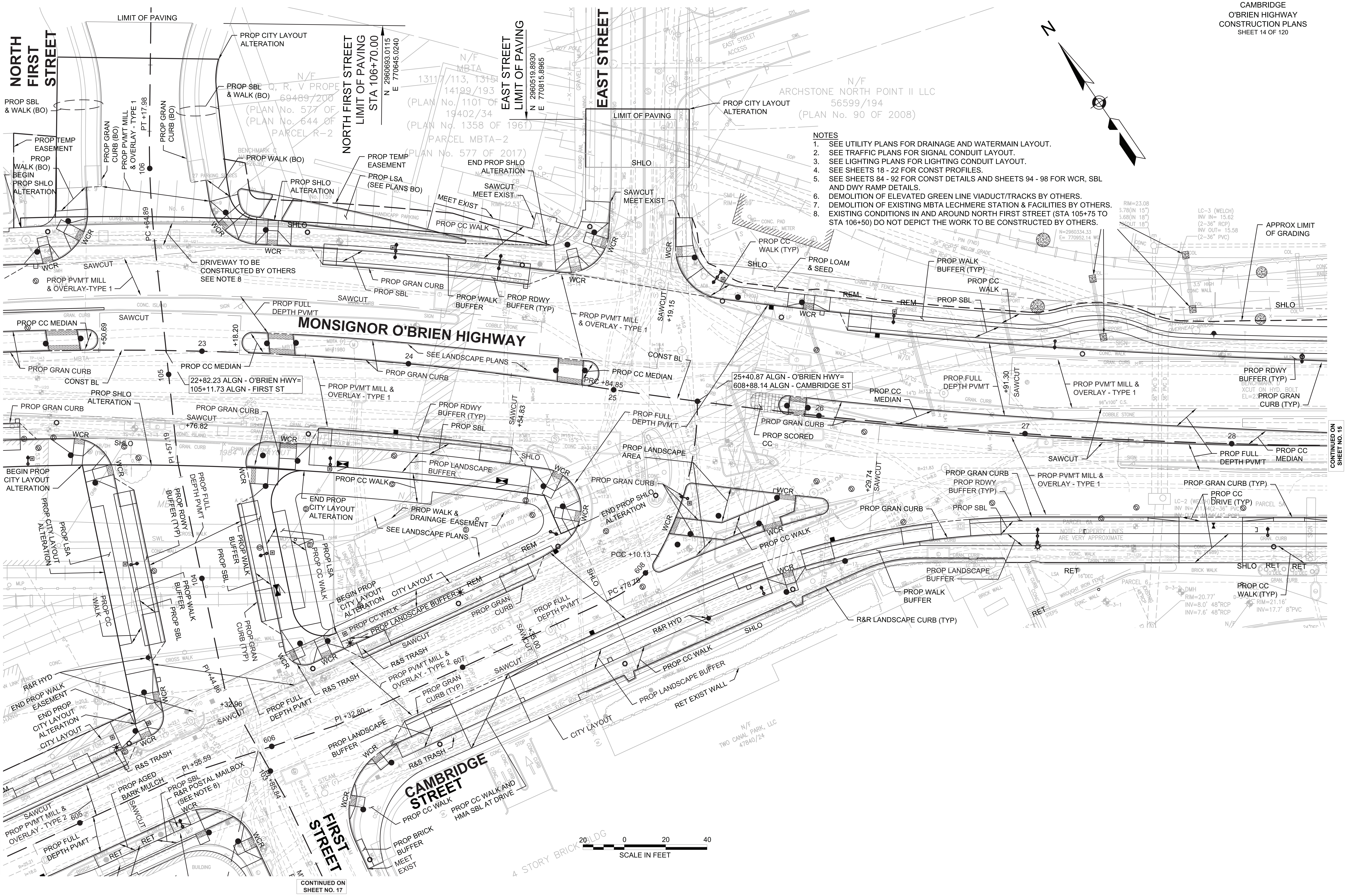
Plotted on 13-Jul-2021 3:25 PM
11554-GEN.DWG



NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DWY RAMP DETAILS.
6. DEMOLITION OF EXISTING MBTA LECHMERE STATION & FACILITIES BY OTHERS.

CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION PLANS
SHEET 14 OF 120

Plotted on 13-Jul-2021 11:46 AM
11554-GEN.DWG



CONTINUED ON SHEET NO. 13

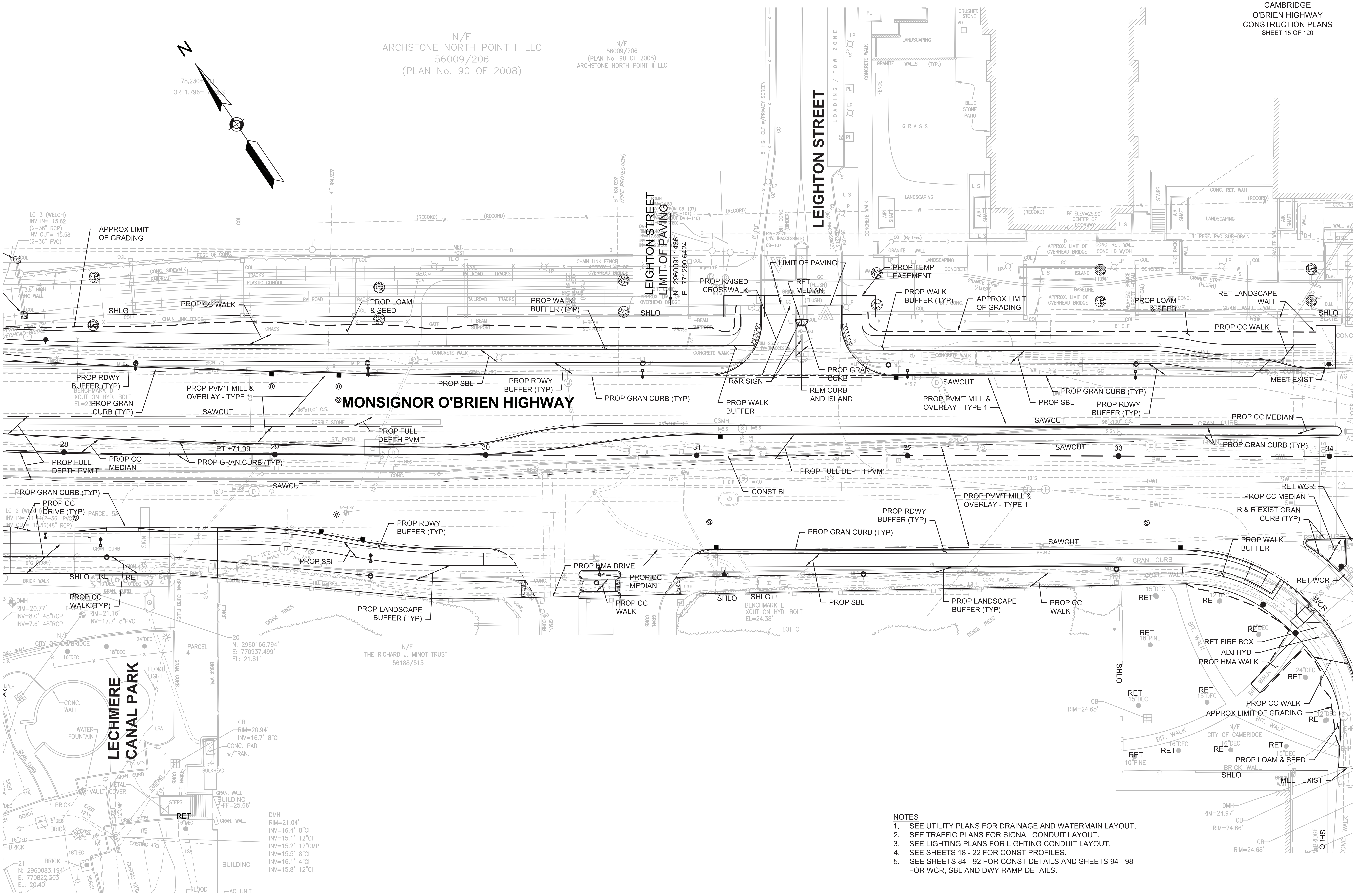
CONTINUED ON SHEET NO. 15

CONTINUED ON SHEET NO. 17

CONTINUED ON SHEET NO. 17

NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DWY RAMP DETAILS.
6. DEMOLITION OF ELEVATED GREEN LINE VIADUCT/TRACKS BY OTHERS.
7. DEMOLITION OF EXISTING MBTA LECHMERE STATION & FACILITIES BY OTHERS.
8. EXISTING CONDITIONS IN AND AROUND NORTH FIRST STREET (STA 105+75 TO STA 106+50) DO NOT DEPICT THE WORK TO BE CONSTRUCTED BY OTHERS.

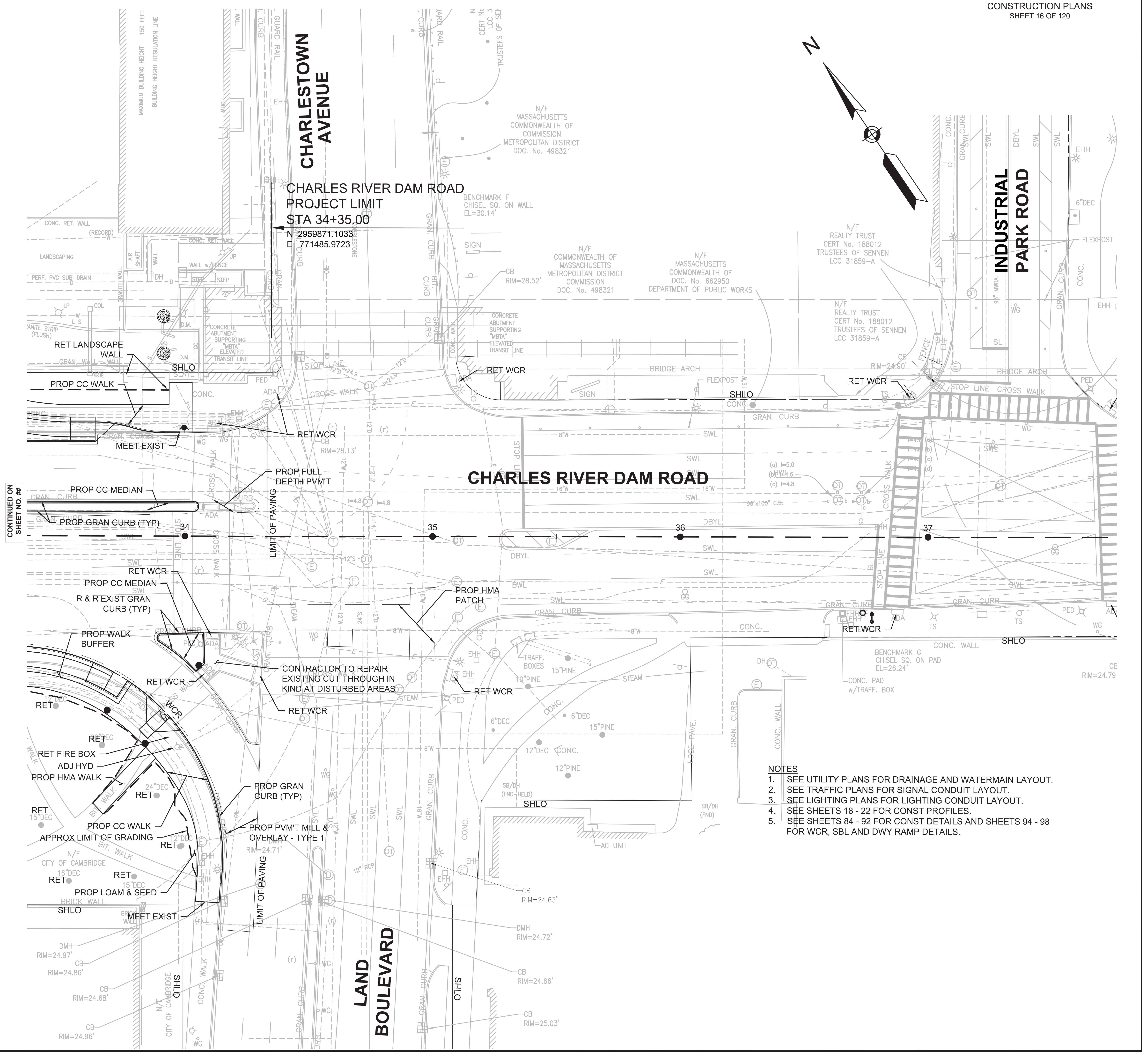
CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION PLANS
SHEET 15 OF 120



NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DWY RAMP DETAILS.

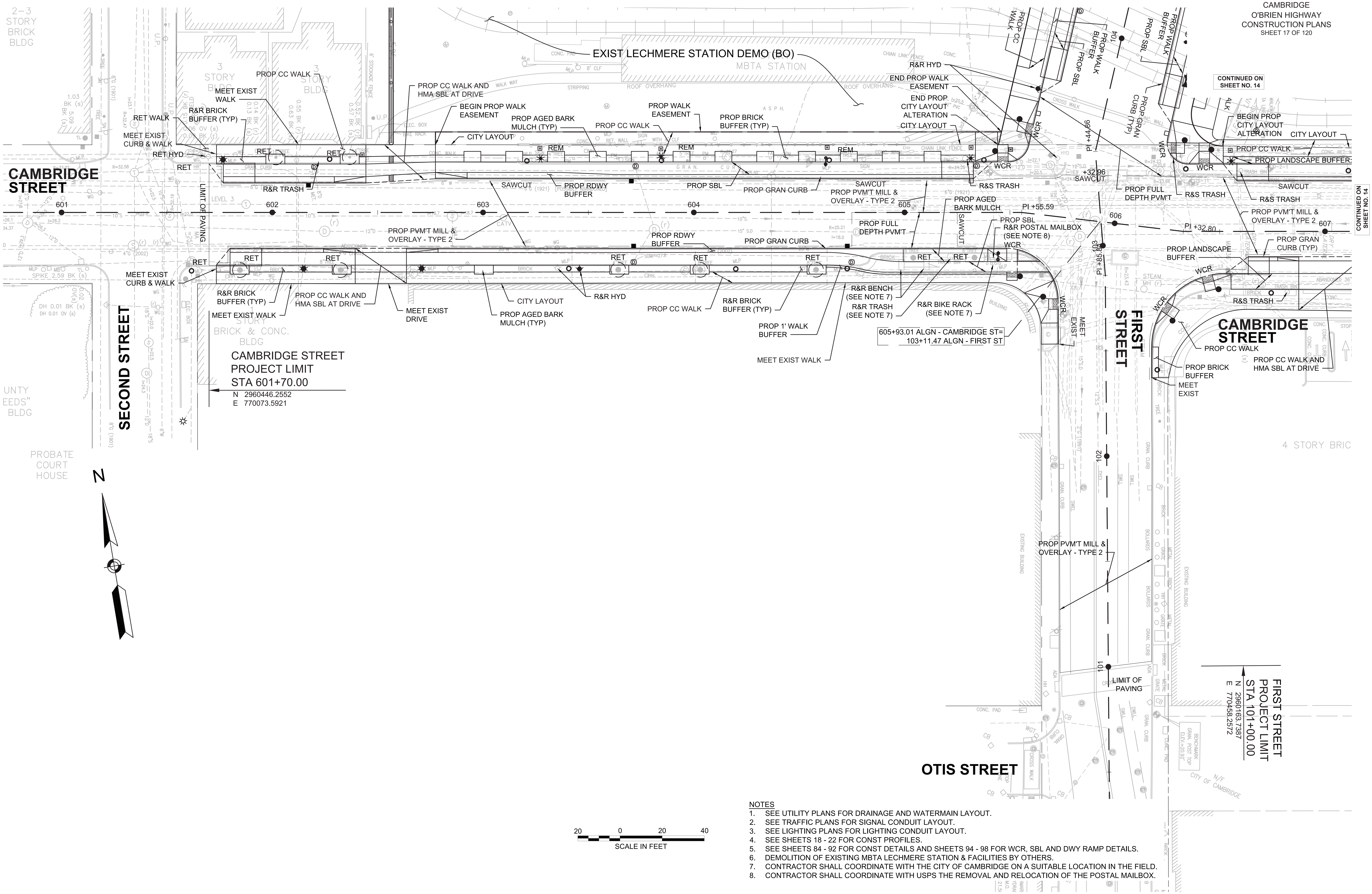
CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION PLANS
SHEET 16 OF 120

11554-GEN.DWG Plotted on 13-Jul-2021 11:47 AM



NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DWY RAMP DETAILS.

CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION PLANS
SHEET 17 OF 120



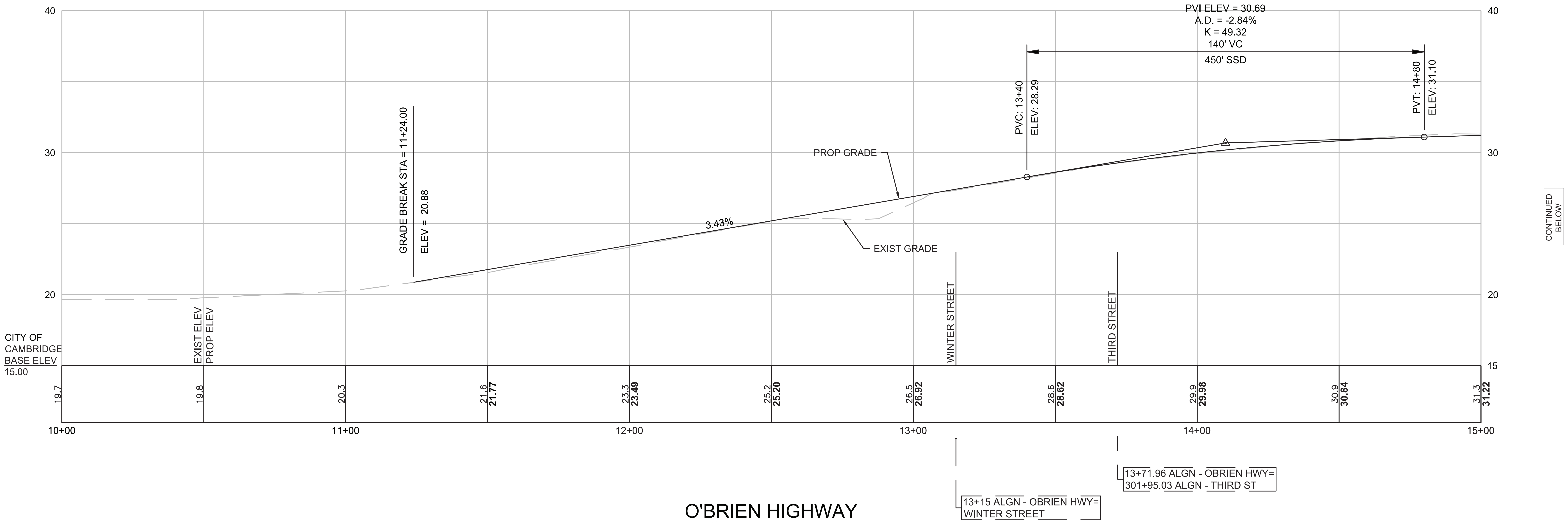
NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DWY RAMP DETAILS.
6. DEMOLITION OF EXISTING MBTA LECHMERE STATION & FACILITIES BY OTHERS.
7. CONTRACTOR SHALL COORDINATE WITH THE CITY OF CAMBRIDGE ON A SUITABLE LOCATION IN THE FIELD.
8. CONTRACTOR SHALL COORDINATE WITH USPS THE REMOVAL AND RELOCATION OF THE POSTAL MAILBOX.

11554-GEN - 11 FIRST ST - V1.DWG Plotted on 19-Nov-2021 2:38 PM

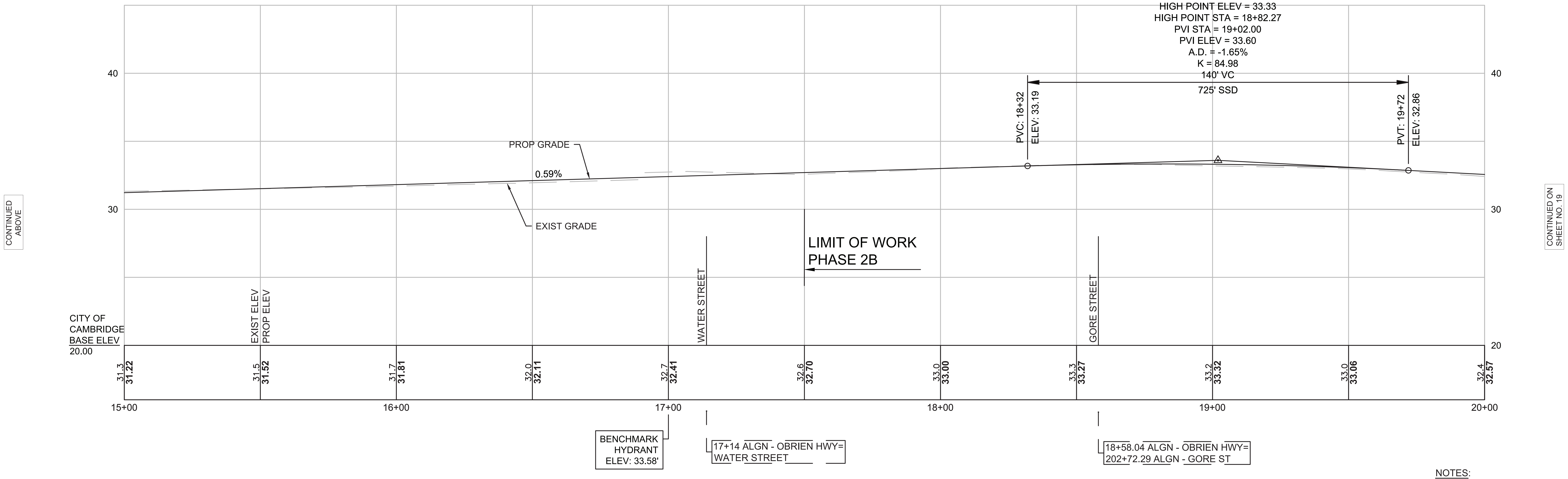
CAMBRIDGE
O'BRIEN HIGHWAY
PROFILE
SHEET 18 OF 120

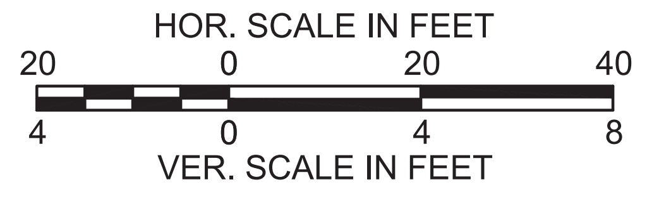
11554-PROF.DWG   Plotted on 13-Jul-2021 11:49 AM

O'BRIEN HIGHWAY



O'BRIEN HIGHWAY





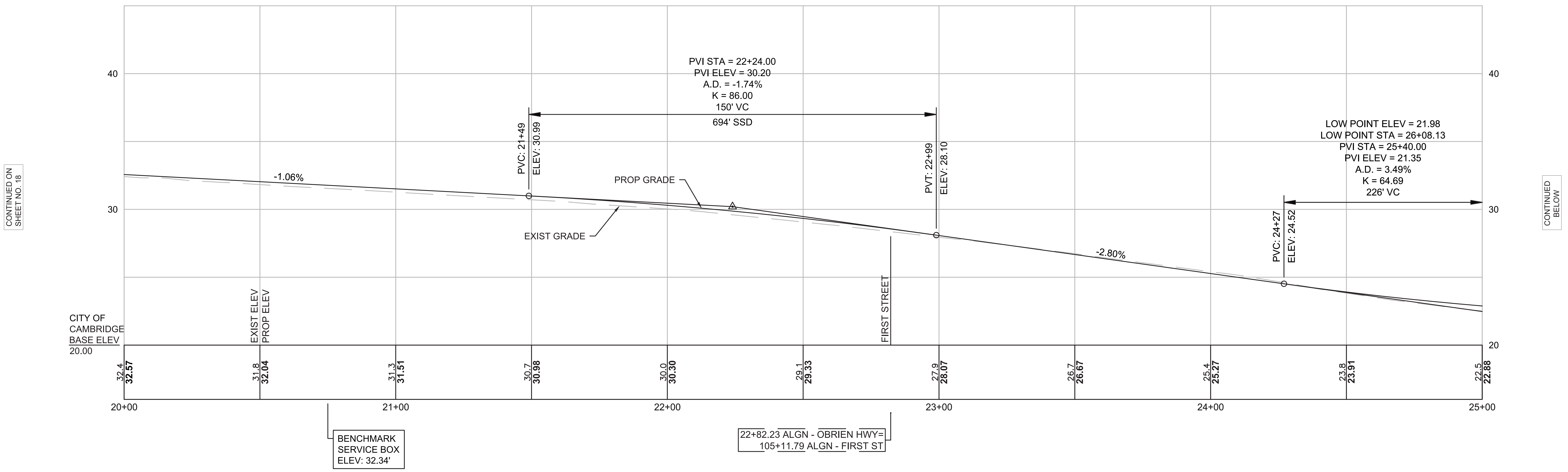
NOTES:

1. FOR CONSTRUCTION PLANS SEE SHEET 13 - 17.
2. PROFILE SHOWN FOR INFORMATIONAL PURPOSES ONLY IN AREAS OF MILL AND OVERLAY.

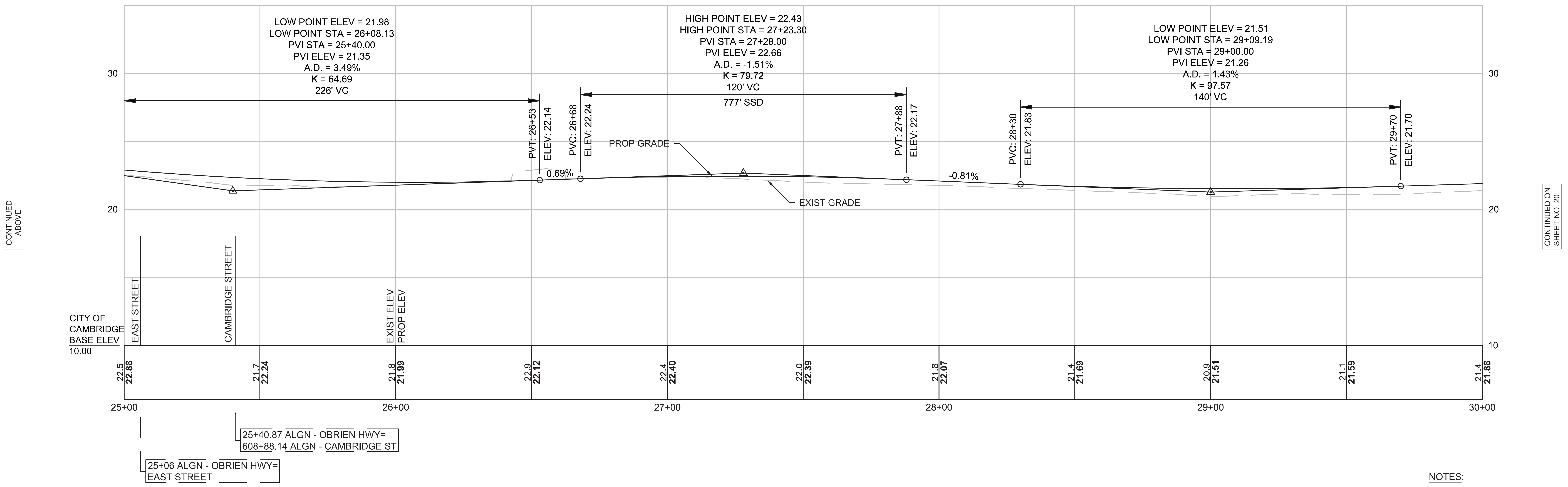
CAMBRIDGE
O'BRIEN HIGHWAY
PROFILE
SHEET 19 OF 120

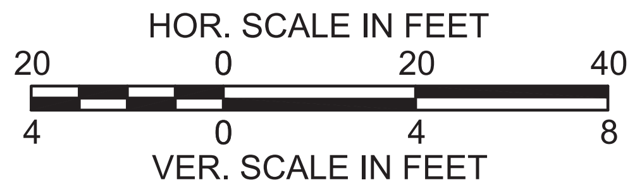
11554-PROF.DWG Plotted on 13-Jul-2021 11:49 AM

O'BRIEN HIGHWAY



O'BRIEN HIGHWAY



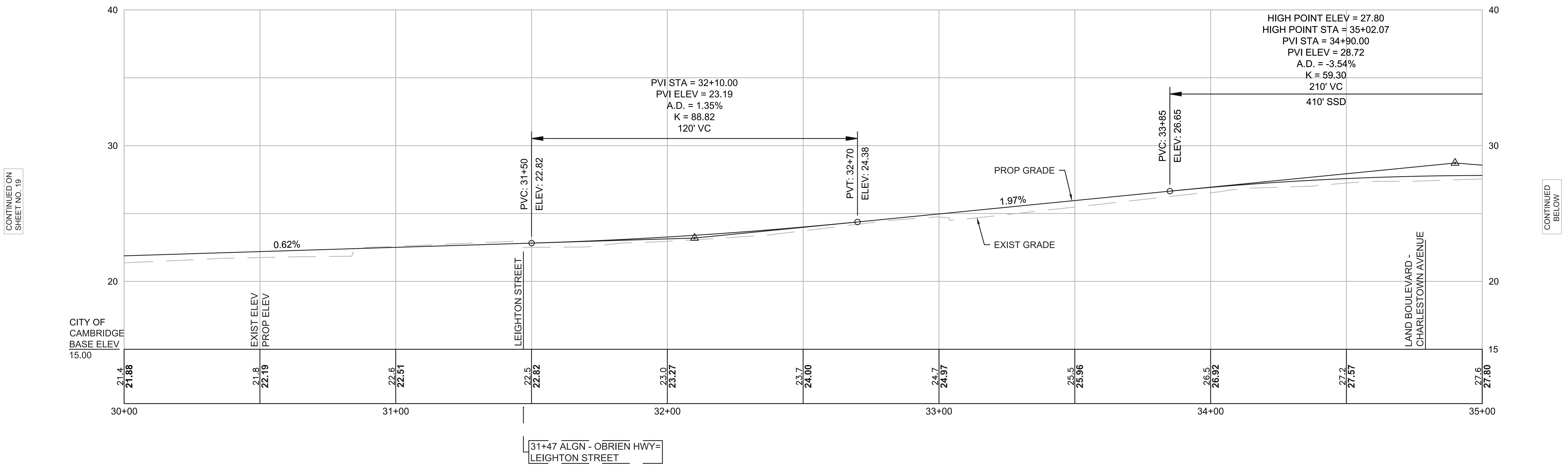


NOTES:

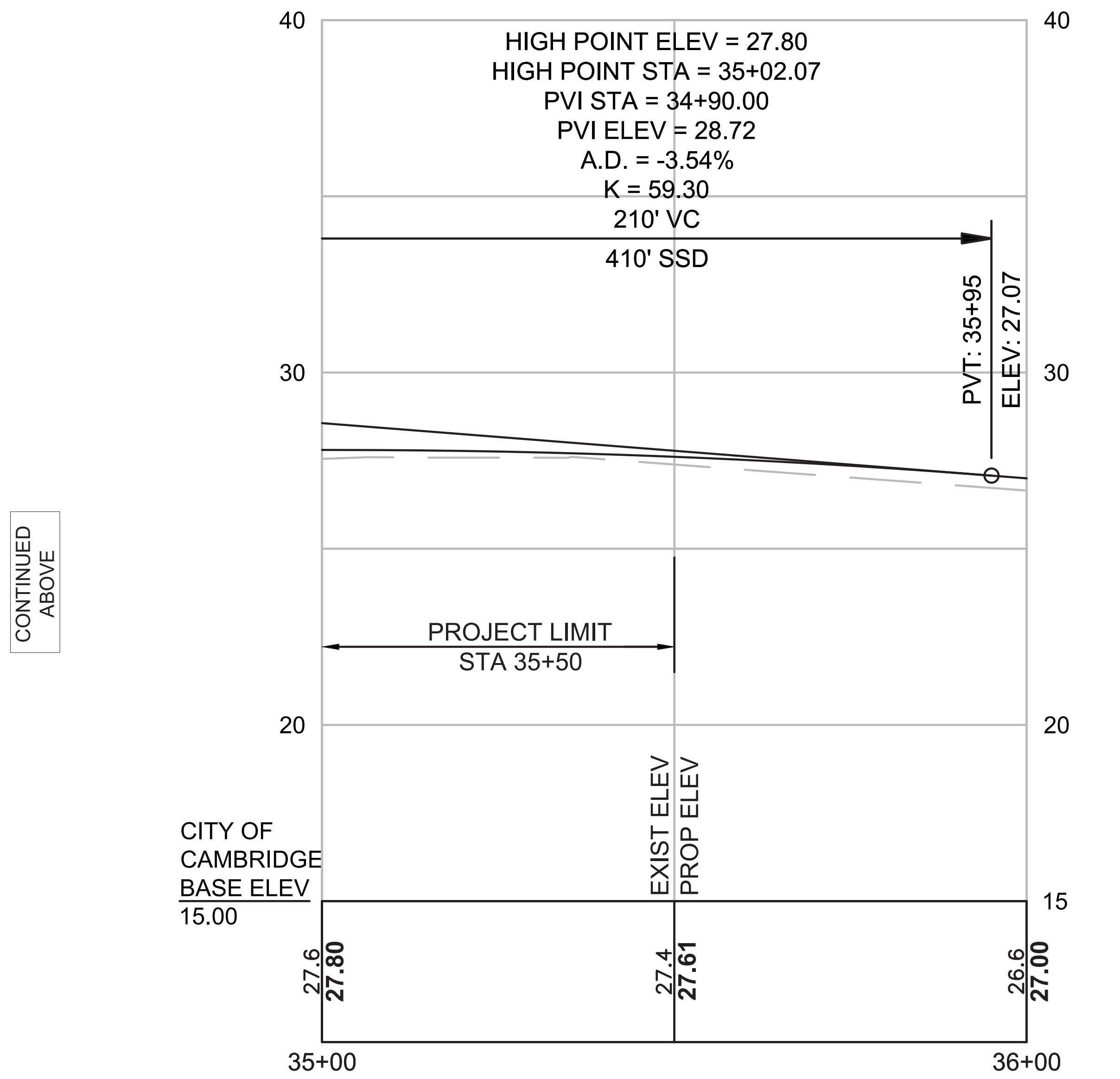
1. FOR CONSTRUCTION PLANS SEE SHEET 13 - 17.
2. PROFILE SHOWN FOR INFORMATIONAL PURPOSES ONLY IN AREAS OF MILL AND OVERLAY.

CAMBRIDGE
O'BRIEN HIGHWAY
PROFILE
SHEET 20 OF 120

O'BRIEN HIGHWAY



O'BRIEN HIGHWAY



HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

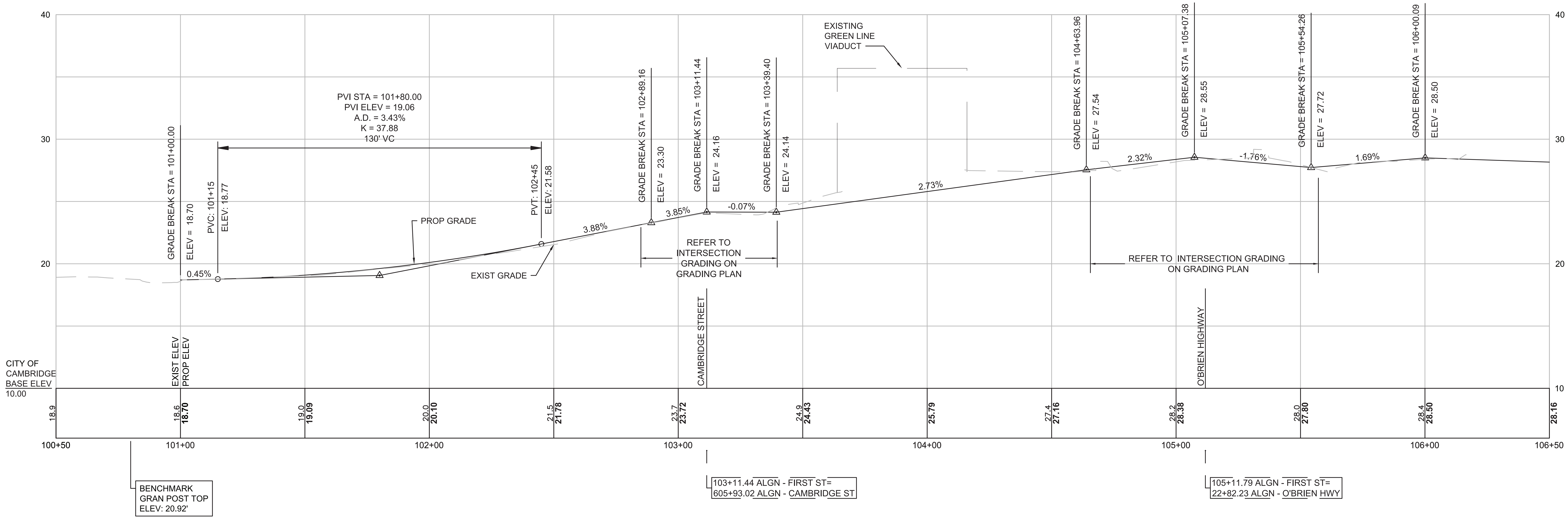
NOTES:

1. FOR CONSTRUCTION PLANS SEE SHEET 13 - 17.
2. PROFILE SHOWN FOR INFORMATIONAL PURPOSES ONLY IN AREAS OF MILL AND OVERLAY.

CAMBRIDGE
O'BRIEN HIGHWAY
PROFILE
SHEET 21 OF 120

11554-PROF.DWG Plotted on 13-Jul-2021 11:49 AM

FIRST STREET



HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

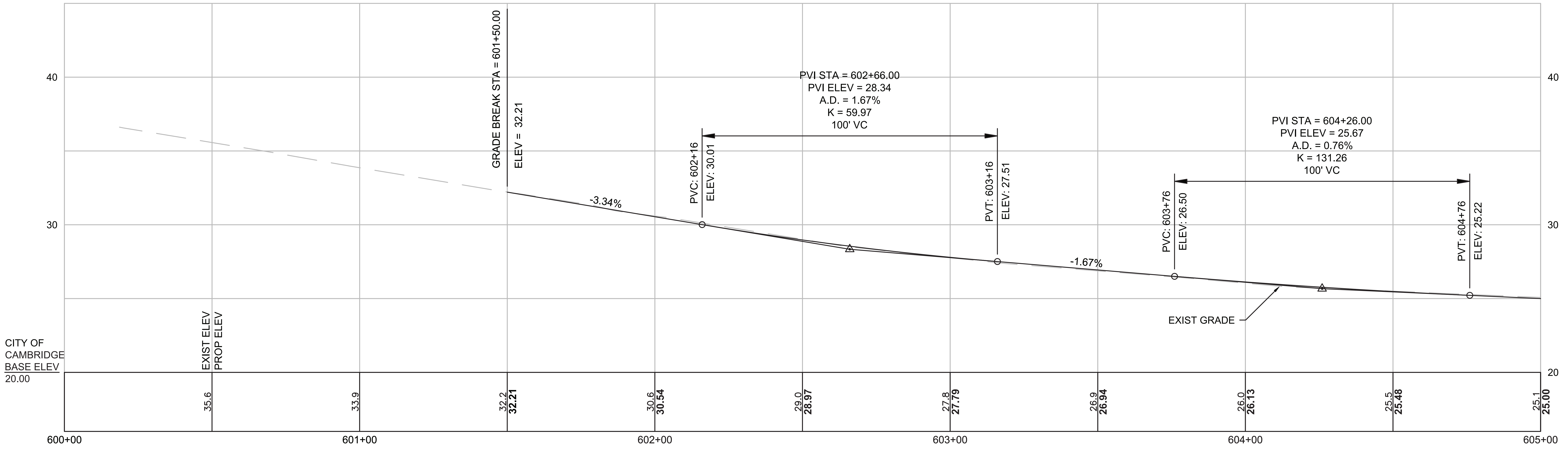
NOTES:

1. FOR CONSTRUCTION PLANS SEE SHEET 13 - 17.
2. PROFILE SHOWN FOR INFORMATIONAL PURPOSES ONLY IN AREAS OF MILL AND OVERLAY.

CAMBRIDGE
O'BRIEN HIGHWAY
PROFILE
SHEET 22 OF 120

11554-PROF.DWG Plotted on 13-Jul-2021 11:49 AM

CAMBRIDGE STREET



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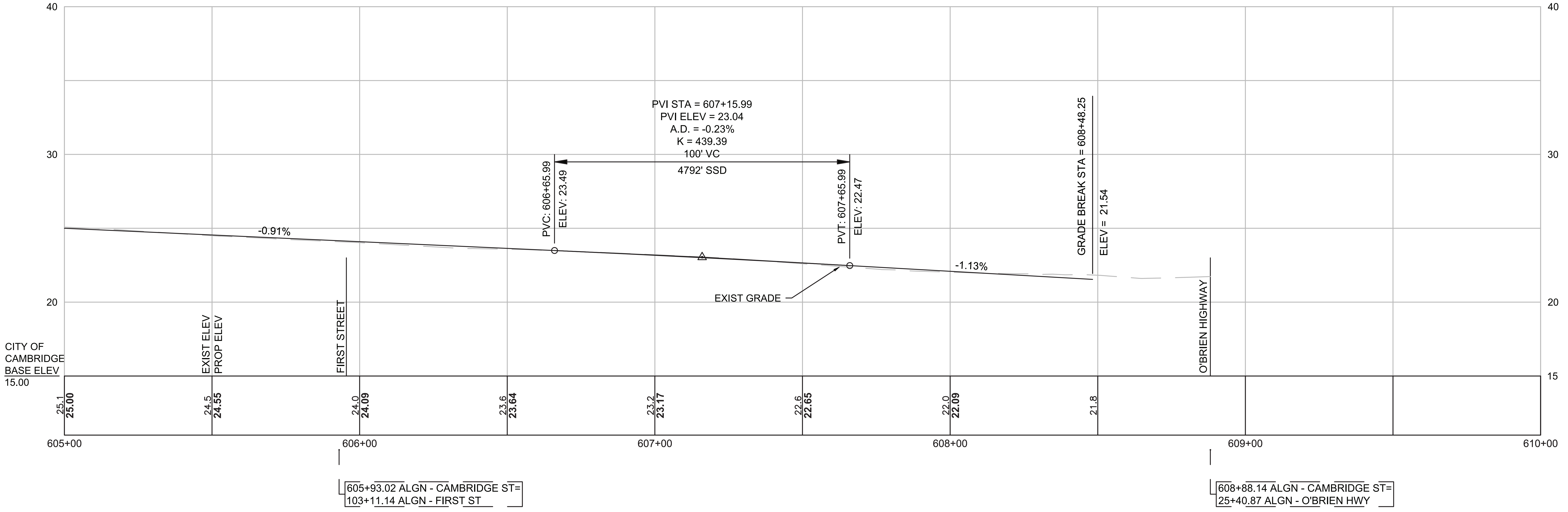
CAMBRIDGE STREET



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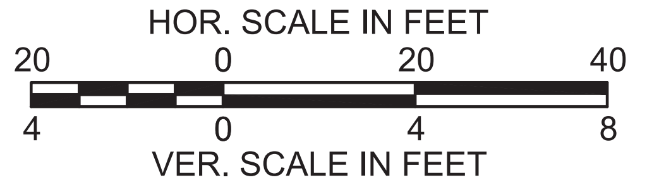


NOTES:

1. FOR CONSTRUCTION PLANS SEE SHEET 13 - 17.
2. PROFILE SHOWN FOR INFORMATIONAL PURPOSES ONLY IN AREAS OF MILL AND OVERLAY.

NOTES:

1. SEE SHEETS 28-32 FOR GRADING INFORMATION.
2. SEE SHEETS 94-98 FOR DRIVEWAY, WHEELCHAIR RAMP, AND SEPARATED BIKE LANE RAMP DETAILS.

ALGN - GORE ST CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	200+00.00	2960728.0450	769952.9543		S80° 31' 47"E 154.62'	201+54.62	2960702.6044	770105.4689
C4	201+54.62	2960702.6044	770105.4689	R=40.00' Δ=26°52'37" L=18.76' T=9.56'		201+73.39	2960703.8911	770124.0163
L6	201+73.39	2960703.8911	770124.0163		N72° 35' 36"E 24.29'	201+97.67	2960711.1571	770147.1928
C5	201+97.67	2960711.1571	770147.1928	R=50.00' Δ=44°39'38" L=38.97' T=20.54'		202+36.65	2960735.4455	770176.4100
L7	202+36.65	2960735.4455	770176.4100		N27° 55' 58"E 35.64'	202+72.29	2960766.9312	770193.1040

CURVE TABLE

CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
12	38.88'	2°54'03"	768.00'	19.45'
14	30.93'	2°17'01"	776.00'	15.47'
17	38.58'	11°03'09"	200.00'	19.35'
18	114.17'	17°40'48"	370.00'	57.54'
20	31.42'	9°00'06"	200.00'	15.74'
21	39.80'	15°12'13"	150.00'	20.02'
22	39.80'	15°12'13"	150.00'	20.02'
23	40.29'	92°20'44"	25.00'	26.05'
24	27.63'	79°09'35"	20.00'	16.53'
25	15.71'	180°00'00"	5.00'	INFINITY'

LEGEND:

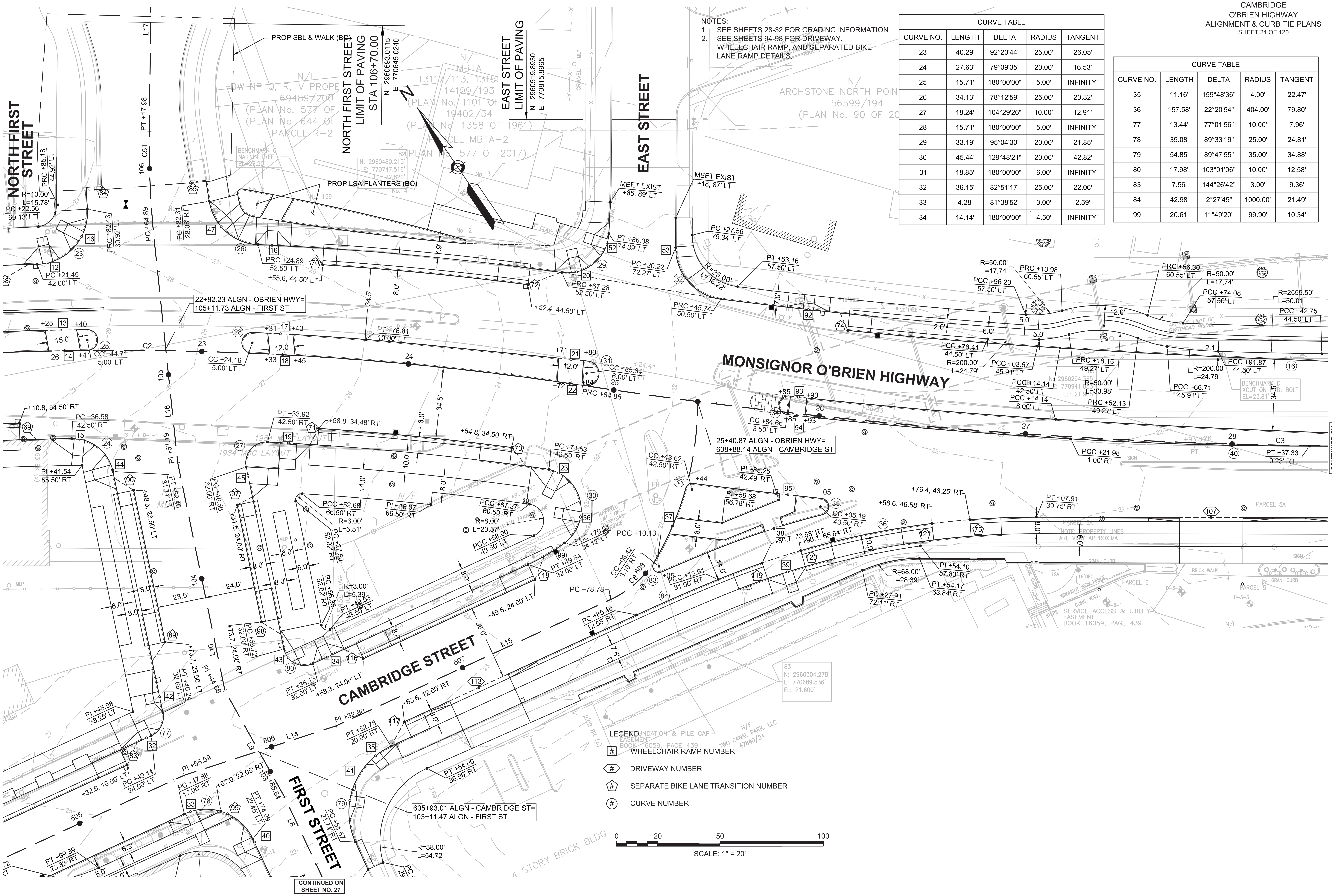
#	WHEELCHAIR RAMP NUMBER
#	DRIVEWAY NUMBER
#	SEPARATE BIKE LANE TRANSITION NUMBER
#	CURVE NUMBER

CAMBRIDGE
O'BRIEN HIGHWAY
ALIGNMENT & CURB TIE PLANS
SHEET 24 OF 120

NOTES:
1. SEE SHEETS 28-32 FOR GRADING INFORMATION.
2. SEE SHEETS 94-98 FOR DRIVEWAY, WHEELCHAIR RAMP, AND SEPARATED BIKE LANE RAMP DETAILS.

CURVE TABLE				
CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
23	40.29'	92°20'44"	25.00'	26.05'
24	27.63'	79°09'35"	20.00'	16.53'
25	15.71'	180°00'00"	5.00'	INFINITY'
26	34.13'	78°12'59"	25.00'	20.32'
27	18.24'	104°29'26"	10.00'	12.91'
28	15.71'	180°00'00"	5.00'	INFINITY'
29	33.19'	95°04'30"	20.00'	21.85'
30	45.44'	129°48'21"	20.06'	42.82'
31	18.85'	180°00'00"	6.00'	INFINITY'
32	36.15'	82°51'17"	25.00'	22.06'
33	4.28'	81°38'52"	3.00'	2.59'
34	14.14'	180°00'00"	4.50'	INFINITY'

CURVE TABLE				
CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
35	11.16'	159°48'36"	4.00'	22.47'
36	157.58'	22°20'54"	404.00'	79.80'
77	13.44'	77°01'56"	10.00'	7.96'
78	39.08'	89°33'19"	25.00'	24.81'
79	54.85'	89°47'55"	35.00'	34.88'
80	17.98'	103°01'06"	10.00'	12.58'
83	7.56'	144°26'42"	3.00'	9.36'
84	42.98'	2°27'45"	1000.00'	21.49'
99	20.61'	11°49'20"	99.90'	10.34'


NORTH FIRST STREET
EAST STREET
MONSIGNOR O'BRIEN HIGHWAY
CAMBRIDGE STREET
FIRST STREET
NORTH FIRST STREET LIMIT OF PAVING STA 106+70.00
N 2960693.0115
E 770645.0240
EAST STREET LIMIT OF PAVING
N 2960519.8930
E 770815.8965
PROP SBL & WALK (BO)
PROP LSA PLANTERS (BO)
N/F MBTA 13117/113, 13151 14199/193 (PLAN No. 1101 OF 19402/34 (PLAN No. 1358 OF 1961) PARCEL MBTA-2 (PLAN No. 577 OF 2017)
N/F ARCHSTONE NORTH POINT 56599/194 (PLAN No. 90 OF 20
N/F DW NP Q, R, V PROPE 69489/200 (PLAN No. 577 OF (PLAN No. 644 OF PARCEL R-2
BENCHMARK C NAIL IN TREE EL=26.90'
BENCHMARK D XCUT ON BOLT EL=23.81'
MEET EXIST +85, 89' LT
MEET EXIST +18, 87' LT
22+82.23 ALGN - OBRIEN HWY= 105+11.73 ALGN - FIRST ST
25+40.87 ALGN - OBRIEN HWY= 608+88.14 ALGN - CAMBRIDGE ST
605+93.01 ALGN - CAMBRIDGE ST= 103+11.47 ALGN - FIRST ST
N/F TWO CANAL PARK, LLC 47840/24
FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
SERVICE ACCESS & UTILITY EASEMENT BOOK 16059, PAGE 439
PARCEL 5A
PARCEL 6A NOTE: PROPERTY LINES ARE VERY APPROXIMATE
PARCEL 6
PARCEL 5
4 STORY BRICK BLDG
1984 MDC LAYOUT
R=2555.50' L=50.01'
R=38.00' L=54.72'
R=68.00' L=28.39'
CONTINUED ON SHEET NO. 23
CONTINUED ON SHEET NO. 25
CONTINUED ON SHEET NO. 27

LEGEND:

# (square)	WHEELCHAIR RAMP NUMBER
# (hexagon)	DRIVEWAY NUMBER
# (pentagon)	SEPARATE BIKE LANE TRANSITION NUMBER
# (circle)	CURVE NUMBER

0 20 50 100

SCALE: 1" = 20'

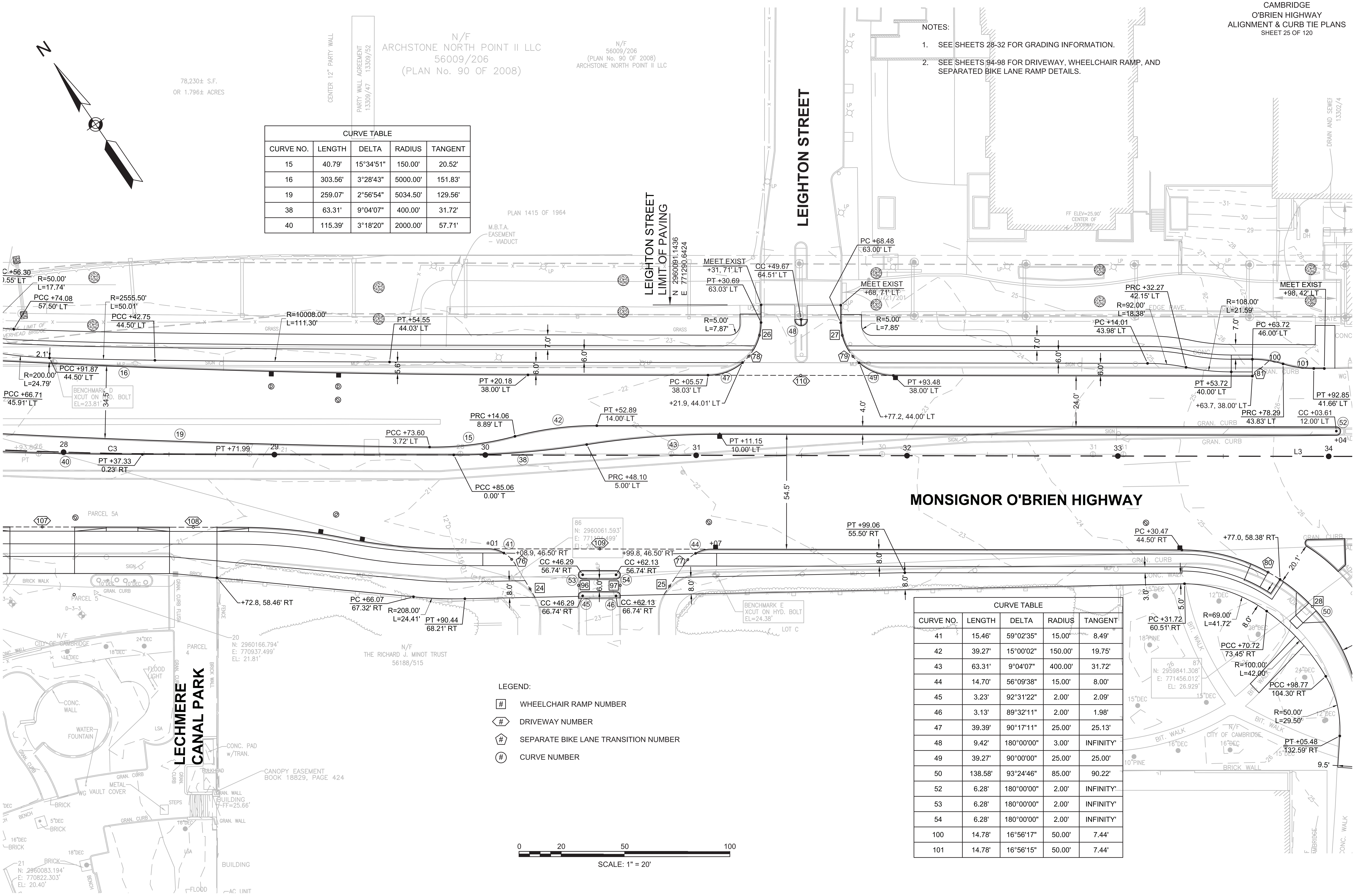
Plotted on 13-Jul-2021 11:51 AM

11554-ALGN.DWG

CAMBRIDGE
O'BRIEN HIGHWAY
ALIGNMENT & CURB TIE PLANS
SHEET 25 OF 120

NOTES:

1. SEE SHEETS 28-32 FOR GRADING INFORMATION.
2. SEE SHEETS 94-98 FOR DRIVEWAY, WHEELCHAIR RAMP, AND SEPARATED BIKE LANE RAMP DETAILS.



CURVE TABLE				
CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
15	40.79'	15°34'51"	150.00'	20.52'
16	303.56'	3°28'43"	5000.00'	151.83'
19	259.07'	2°56'54"	5034.50'	129.56'
38	63.31'	9°04'07"	400.00'	31.72'
40	115.39'	3°18'20"	2000.00'	57.71'

CURVE TABLE				
CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
41	15.46'	59°02'35"	15.00'	8.49'
42	39.27'	15°00'02"	150.00'	19.75'
43	63.31'	9°04'07"	400.00'	31.72'
44	14.70'	56°09'38"	15.00'	8.00'
45	3.23'	92°31'22"	2.00'	2.09'
46	3.13'	89°32'11"	2.00'	1.98'
47	39.39'	90°17'11"	25.00'	25.13'
48	9.42'	180°00'00"	3.00'	INFINITY'
49	39.27'	90°00'00"	25.00'	25.00'
50	138.58'	93°24'46"	85.00'	90.22'
52	6.28'	180°00'00"	2.00'	INFINITY'
53	6.28'	180°00'00"	2.00'	INFINITY'
54	6.28'	180°00'00"	2.00'	INFINITY'
100	14.78'	16°56'17"	50.00'	7.44'
101	14.78'	16°56'15"	50.00'	7.44'

LEGEND:

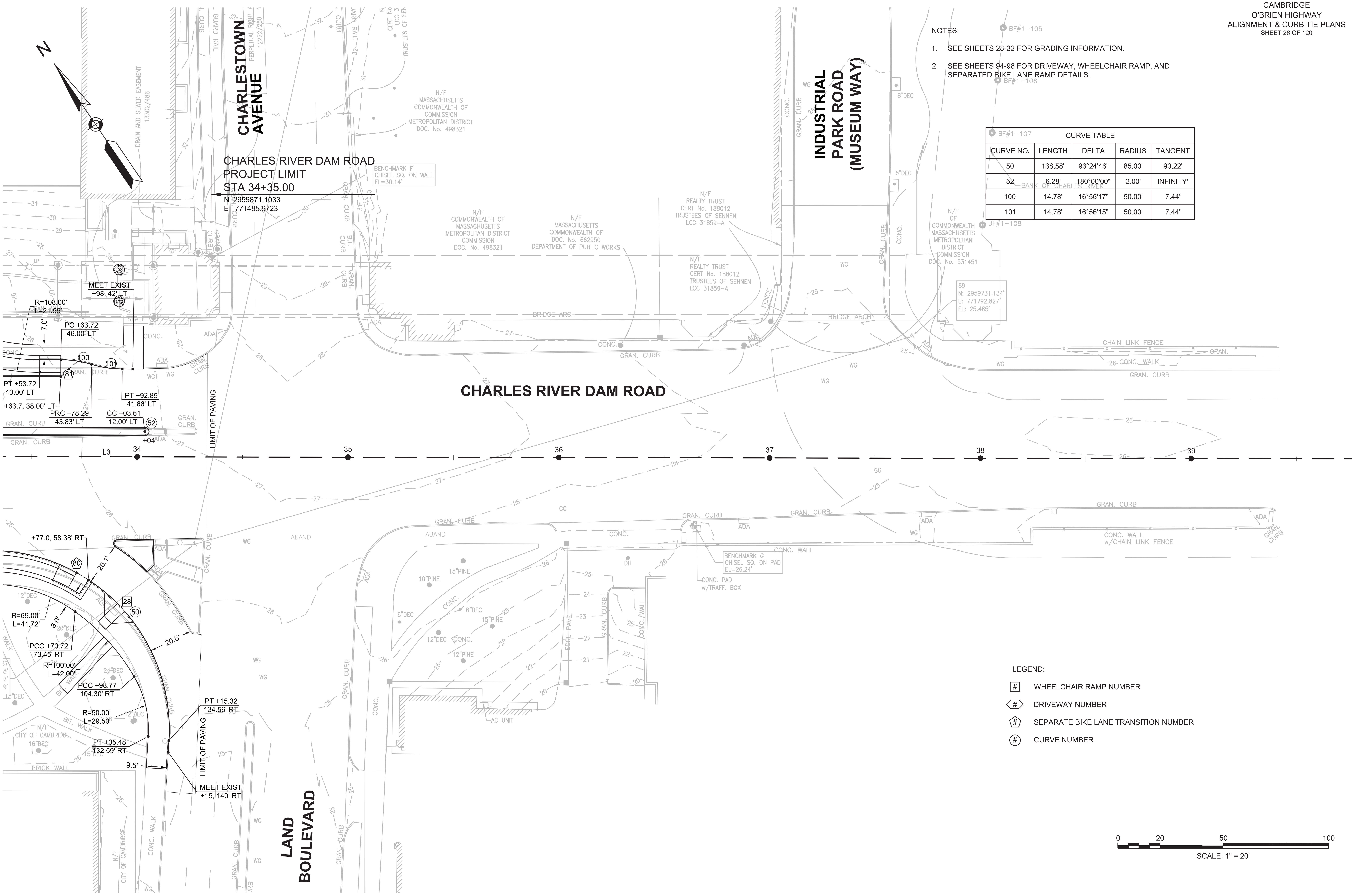
#	WHEELCHAIR RAMP NUMBER
#	DRIVEWAY NUMBER
#	SEPARATE BIKE LANE TRANSITION NUMBER
#	CURVE NUMBER

NOTES:

1. SEE SHEETS 28-32 FOR GRADING INFORMATION.
2. SEE SHEETS 94-98 FOR DRIVEWAY, WHEELCHAIR RAMP, AND SEPARATED BIKE LANE RAMP DETAILS.

CURVE TABLE

CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
50	138.58'	93°24'46"	85.00'	90.22'
52	6.28'	180°00'00"	2.00'	INFINITY'
100	14.78'	16°56'17"	50.00'	7.44'
101	14.78'	16°56'15"	50.00'	7.44'


N
CHARLESTOWN AVENUE
INDUSTRIAL PARK ROAD (MUSEUM WAY)
CHARLES RIVER DAM ROAD
LAND BOULEVARD
CHARLES RIVER DAM ROAD PROJECT LIMIT
STA 34+35.00
N 2959871.1033
E 771485.9723
BENCHMARK F CHISEL SQ. ON WALL EL=30.14'
BENCHMARK G CHISEL SQ. ON PAD EL=26.24'
89 N: 2959731.134' E: 771792.827' EL: 25.465'
N/F MASSACHUSETTS COMMONWEALTH OF COMMISSION METROPOLITAN DISTRICT DOC. No. 498321
N/F COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 498321
N/F MASSACHUSETTS COMMONWEALTH OF DOC. No. 662950 DEPARTMENT OF PUBLIC WORKS
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F OF COMMONWEALTH MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 531451
N/F CITY OF CAMBRIDGE
DRAIN AND SEWER EASEMENT 13302/486
BF#1-105
BF#1-106
BF#1-107
BF#1-108
BANK OF CHARLES RIVER
BRIDGE ARCH
CHAIN LINK FENCE
CONC. WALL w/CHAIN LINK FENCE
CONC. PAD w/TRAF. BOX
MEET EXIST +98, 42' LT
R=108.00' L=21.59'
PC +63.72 46.00' LT
PT +53.72 40.00' LT
+63.7, 38.00' LT
PRC +78.29 43.83' LT
CC +03.61 12.00' LT
PT +92.85 41.66' LT
+04
LIMIT OF PAVING
L3
34
35
36
37
38
39
+77.0, 58.38' RT
20.1'
R=69.00' L=41.72'
8.0'
PCC +70.72 73.45' RT
R=100.00' L=42.00'
PCC +98.77 104.30' RT
20.8'
R=50.00' L=29.50'
PT +05.48 132.59' RT
PT +15.32 134.56' RT
9.5'
MEET EXIST +15, 140' RT
7.0'
100
101
81
52
80
28
50
CONTINUED ON SHEET NO. ##

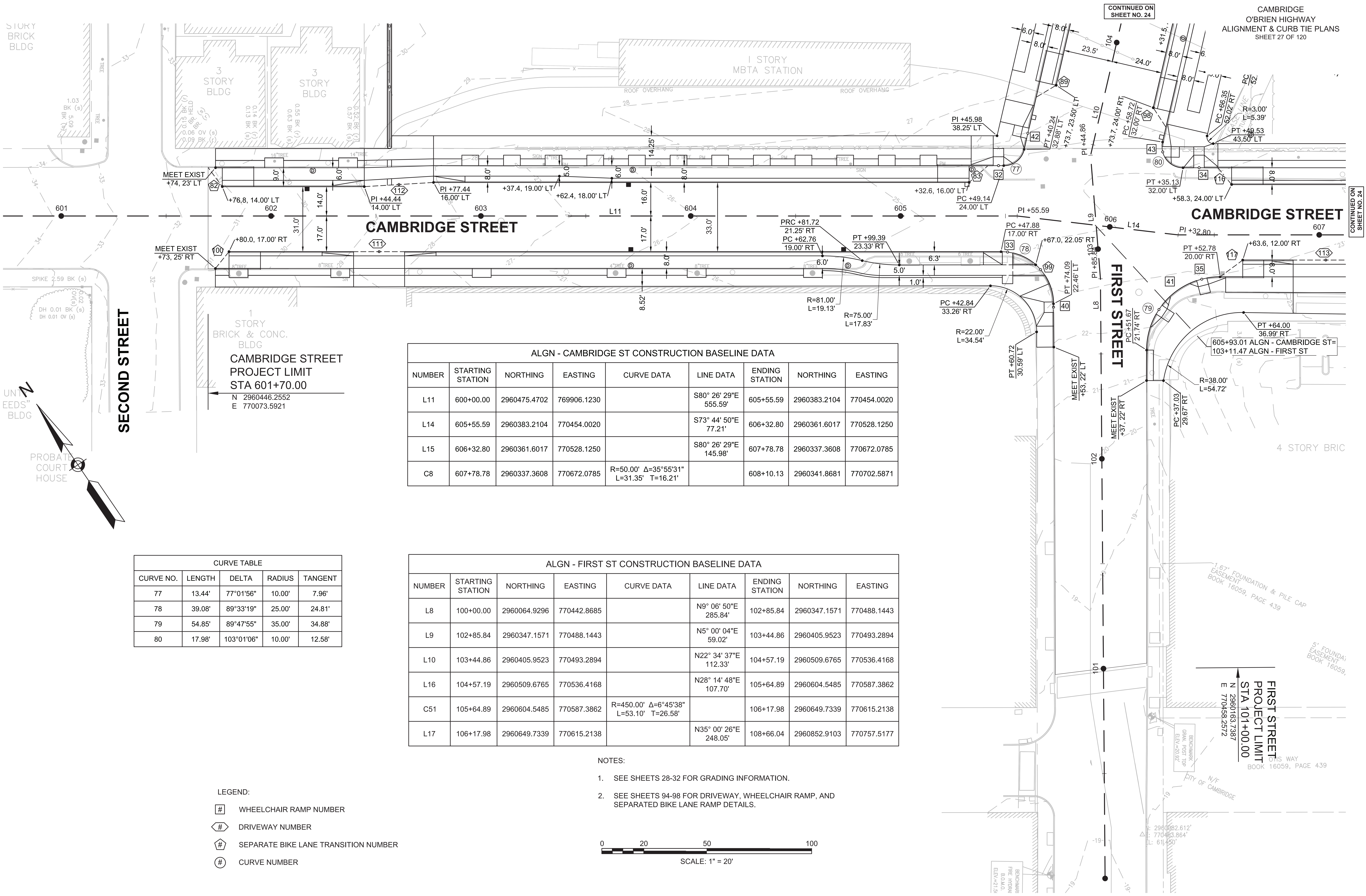
LEGEND:

#	WHEELCHAIR RAMP NUMBER
#⬡	DRIVEWAY NUMBER
⬠#	SEPARATE BIKE LANE TRANSITION NUMBER
(#)	CURVE NUMBER

0 20 50 100
SCALE: 1" = 20'

CAMBRIDGE
O'BRIEN HIGHWAY
ALIGNMENT & CURB TIE PLANS
SHEET 27 OF 120

CONTINUED ON SHEET NO. 24



ALGN - CAMBRIDGE ST CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	600+00.00	2960475.4702	769906.1230		S80° 26' 29"E 555.59'	605+55.59	2960383.2104	770454.0020
L14	605+55.59	2960383.2104	770454.0020		S73° 44' 50"E 77.21'	606+32.80	2960361.6017	770528.1250
L15	606+32.80	2960361.6017	770528.1250		S80° 26' 29"E 145.98'	607+78.78	2960337.3608	770672.0785
C8	607+78.78	2960337.3608	770672.0785	R=50.00' Δ=35°55'31" L=31.35' T=16.21'		608+10.13	2960341.8681	770702.5871

CURVE TABLE				
CURVE NO.	LENGTH	DELTA	RADIUS	TANGENT
77	13.44'	77°01'56"	10.00'	7.96'
78	39.08'	89°33'19"	25.00'	24.81'
79	54.85'	89°47'55"	35.00'	34.88'
80	17.98'	103°01'06"	10.00'	12.58'

ALGN - FIRST ST CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L8	100+00.00	2960064.9296	770442.8685		N9° 06' 50"E 285.84'	102+85.84	2960347.1571	770488.1443
L9	102+85.84	2960347.1571	770488.1443		N5° 00' 04"E 59.02'	103+44.86	2960405.9523	770493.2894
L10	103+44.86	2960405.9523	770493.2894		N22° 34' 37"E 112.33'	104+57.19	2960509.6765	770536.4168
L16	104+57.19	2960509.6765	770536.4168		N28° 14' 48"E 107.70'	105+64.89	2960604.5485	770587.3862
C51	105+64.89	2960604.5485	770587.3862	R=450.00' Δ=6°45'38" L=53.10' T=26.58'		106+17.98	2960649.7339	770615.2138
L17	106+17.98	2960649.7339	770615.2138		N35° 00' 26"E 248.05'	108+66.04	2960852.9103	770757.5177

NOTES:

1. SEE SHEETS 28-32 FOR GRADING INFORMATION.
2. SEE SHEETS 94-98 FOR DRIVEWAY, WHEELCHAIR RAMP, AND SEPARATED BIKE LANE RAMP DETAILS.

LEGEND:

#	WHEELCHAIR RAMP NUMBER
⬡ #	DRIVEWAY NUMBER
⬠ #	SEPARATE BIKE LANE TRANSITION NUMBER
○ #	CURVE NUMBER

0 20 50 100
SCALE: 1" = 20'

11554-ALGN - 11 FIRST ST - V1.DWG Plotted on 19-Nov-2021 2:40 PM

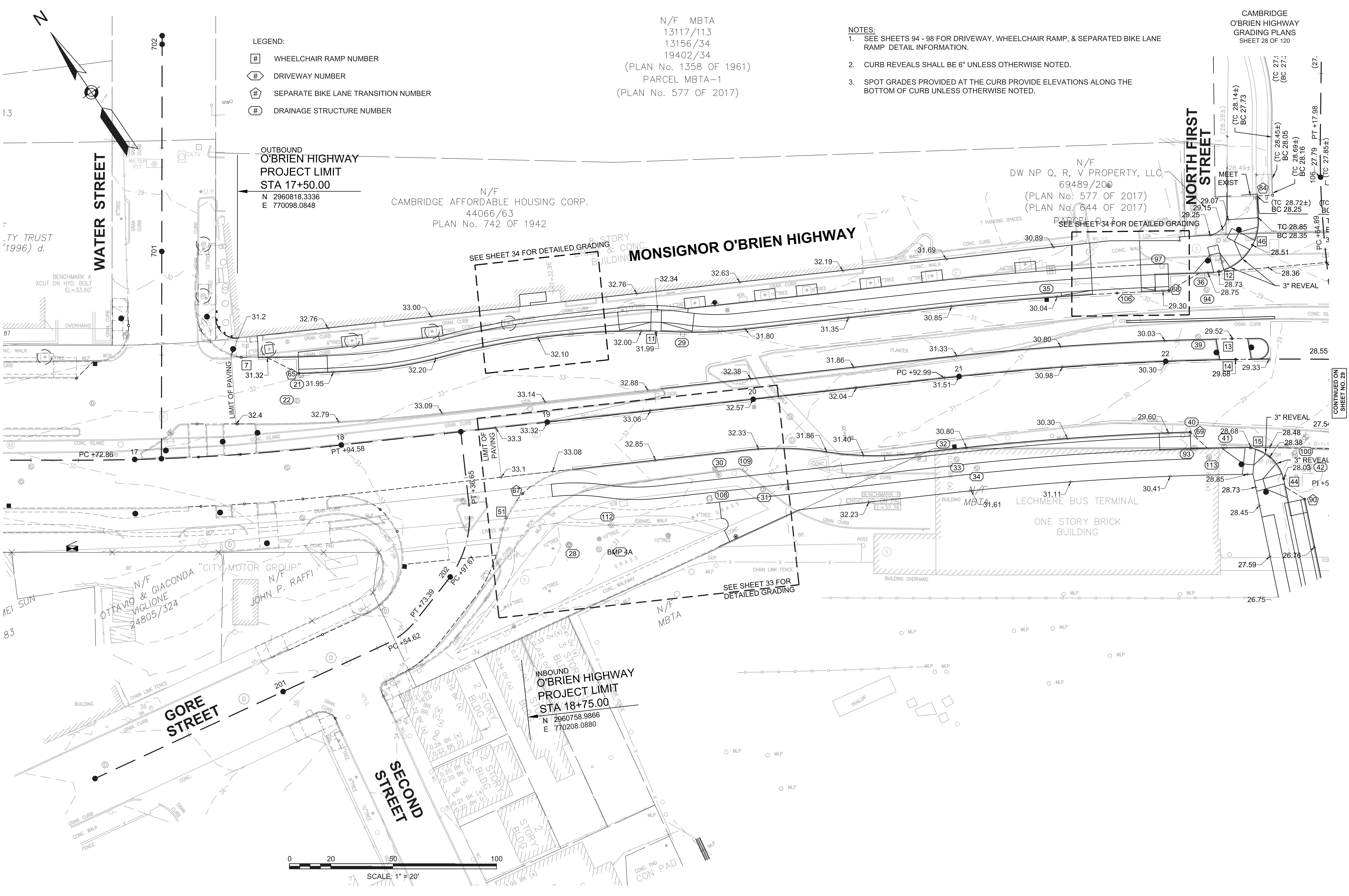
CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 28 OF 120

LEGEND:

#	WHEELCHAIR RAMP NUMBER
#	DRIVEWAY NUMBER
#	SEPARATE BIKE LANE TRANSITION NUMBER
#	DRAINAGE STRUCTURE NUMBER

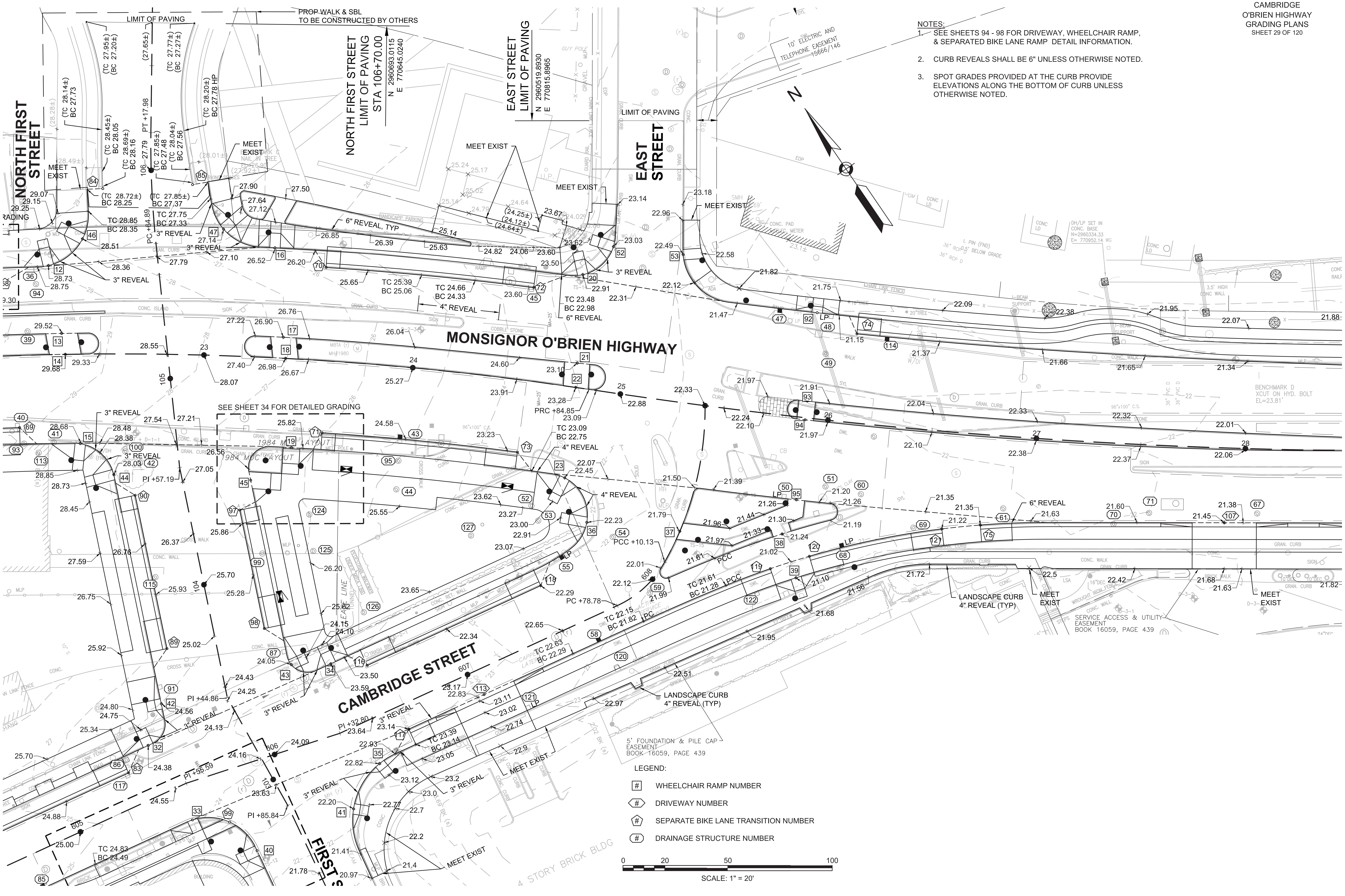
NOTES:

1. SEE SHEETS 94 - 98 FOR DRIVEWAY, WHEELCHAIR RAMP, & SEPARATED BIKE LANE RAMP DETAIL INFORMATION.
2. CURB REVEALS SHALL BE 6" UNLESS OTHERWISE NOTED.
3. SPOT GRADES PROVIDED AT THE CURB PROVIDE ELEVATIONS ALONG THE BOTTOM OF CURB UNLESS OTHERWISE NOTED.



Plotted on 13-Jul-2021 11:54 AM
11554-GRAD.DWG

NOTES:
1. SEE SHEETS 94 - 98 FOR DRIVEWAY, WHEELCHAIR RAMP, & SEPARATED BIKE LANE RAMP DETAIL INFORMATION.
2. CURB REVEALS SHALL BE 6" UNLESS OTHERWISE NOTED.
3. SPOT GRADES PROVIDED AT THE CURB PROVIDE ELEVATIONS ALONG THE BOTTOM OF CURB UNLESS OTHERWISE NOTED.



CONTINUED ON SHEET NO. 28

CONTINUED ON SHEET NO. 30

CONTINUED ON SHEET NO. 32

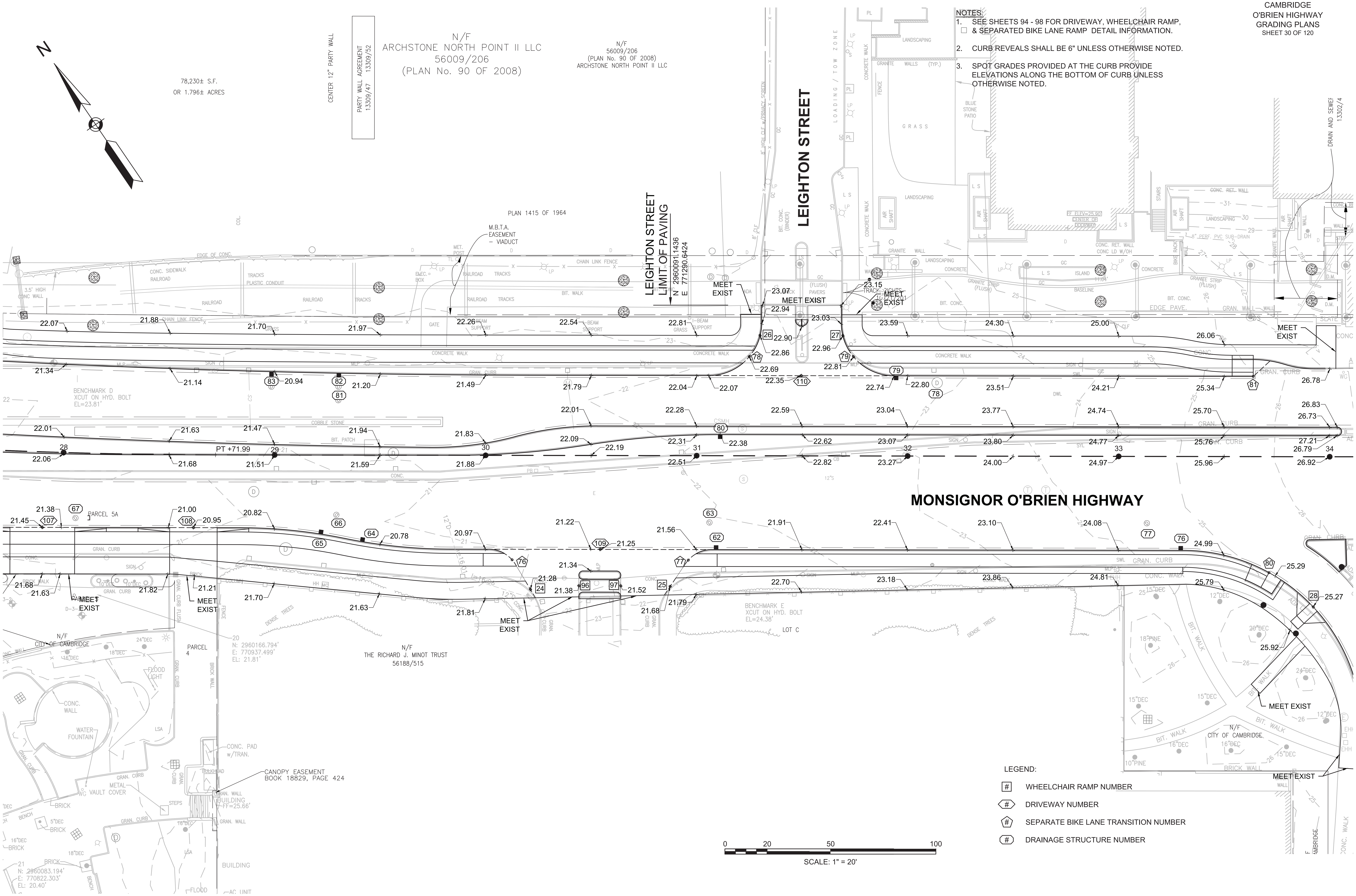
LEGEND:

#	WHEELCHAIR RAMP NUMBER
⟨#⟩	DRIVEWAY NUMBER
⬠#	SEPARATE BIKE LANE TRANSITION NUMBER
(#)	DRAINAGE STRUCTURE NUMBER

0 20 50 100
SCALE: 1" = 20'

CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 30 OF 120

NOTES:
1. SEE SHEETS 94 - 98 FOR DRIVEWAY, WHEELCHAIR RAMP, & SEPARATED BIKE LANE RAMP DETAIL INFORMATION.
2. CURB REVEALS SHALL BE 6" UNLESS OTHERWISE NOTED.
3. SPOT GRADES PROVIDED AT THE CURB PROVIDE ELEVATIONS ALONG THE BOTTOM OF CURB UNLESS OTHERWISE NOTED.


N
N/F
ARCHSTONE NORTH POINT II LLC
56009/206
(PLAN No. 90 OF 2008)
78,230± S.F.
OR 1.796± ACRES
CENTER 12" PARTY WALL
PARTY WALL AGREEMENT 13309/52
13309/47
N/F 56009/206 (PLAN No. 90 OF 2008) ARCHSTONE NORTH POINT II LLC
PLAN 1415 OF 1964
M.B.T.A. EASEMENT - VIADUCT
LEIGHTON STREET LIMIT OF PAVING
N 2960091.1436
E 771290.6424
LEIGHTON STREET
LOADING / TOW ZONE
LANDSCAPING
GRASS
BLUE STONE PATIO
FF ELEV=25.90 CENTER OF DOORWAY
DRAIN AND SEWER 13302/4
MEET EXIST
CONTINUED ON SHEET NO. 29
CONTINUED ON SHEET NO. ##
BENCHMARK D XCUT ON HYD. BOLT EL=23.81'
PT +71.99
28
29
30
31
32
33
34
MONSIGNOR O'BRIEN HIGHWAY
PARCEL 5A
PARCEL 4
N/F CITY OF CAMBRIDGE
N/F THE RICHARD J. MINOT TRUST 56188/515
BENCHMARK E XCUT ON HYD. BOLT EL=24.38'
LOT C
DENSE TREES
20 N: 2960166.794' E: 770937.499' EL: 21.81'
21 N: 2960083.194' E: 770822.303' EL: 20.40'
CONC. PAD w/TRAN.
CANOPY EASEMENT BOOK 18829, PAGE 424
BUILDING FF=25.66'
WATER FOUNTAIN
METAL VAULT COVER
N/F CITY OF CAMBRIDGE

LEGEND:

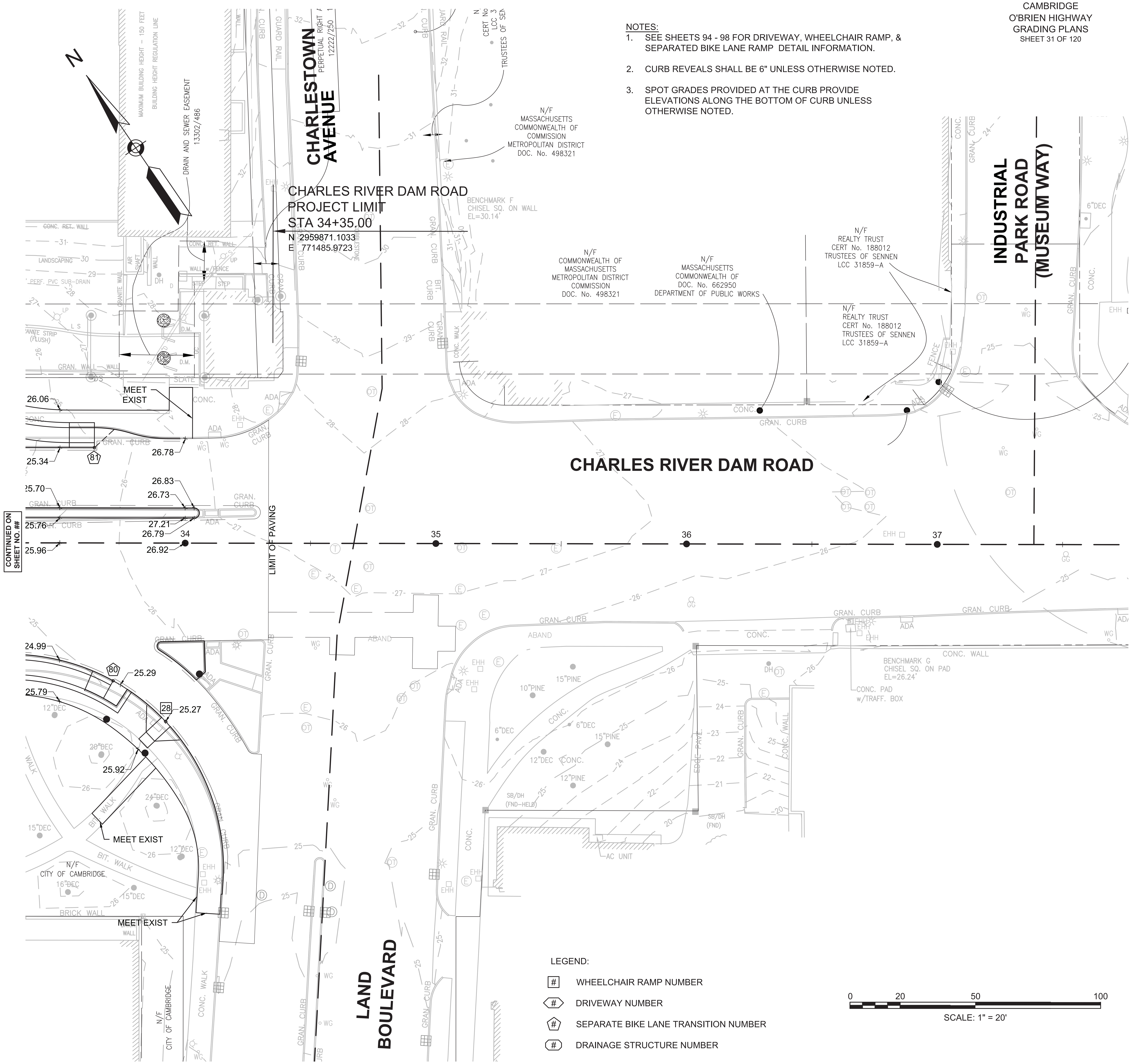
#	WHEELCHAIR RAMP NUMBER
⟨#⟩	DRIVEWAY NUMBER
⬠#	SEPARATE BIKE LANE TRANSITION NUMBER
⬡#	DRAINAGE STRUCTURE NUMBER

0 20 50 100
SCALE: 1" = 20'

11554-GRAD.DWG   Plotted on 13-Jul-2021 11:54 AM

CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 31 OF 120

NOTES:
1. SEE SHEETS 94 - 98 FOR DRIVEWAY, WHEELCHAIR RAMP, & SEPARATED BIKE LANE RAMP DETAIL INFORMATION.
2. CURB REVEALS SHALL BE 6" UNLESS OTHERWISE NOTED.
3. SPOT GRADES PROVIDED AT THE CURB PROVIDE ELEVATIONS ALONG THE BOTTOM OF CURB UNLESS OTHERWISE NOTED.



N
CHARLESTOWN AVENUE
CHARLES RIVER DAM ROAD
PROJECT LIMIT
STA 34+35.00
N 2959871.1033
E 771485.9723
DRAIN AND SEWER EASEMENT 13302/486
MAXIMUM BUILDING HEIGHT - 150 FEET
BUILDING HEIGHT REGULATION LINE
PERPETUAL RIGHT 12222/250
N/F MASSACHUSETTS COMMONWEALTH OF COMMISSION METROPOLITAN DISTRICT DOC. No. 498321
BENCHMARK F CHISEL SQ. ON WALL EL=30.14'
N/F COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 498321
N/F MASSACHUSETTS COMMONWEALTH OF DOC. No. 662950 DEPARTMENT OF PUBLIC WORKS
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
INDUSTRIAL PARK ROAD (MUSEUM WAY)
CHARLES RIVER DAM ROAD
MEET EXIST
26.06
81
25.34
26.78
25.70
26.83
26.73
25.76
27.21
26.79
34
25.96
26.92
CONTINUED ON SHEET NO. ##
LIMIT OF PAVING
35
36
37
24.99
80
25.29
25.79
28
25.27
25.92
MEET EXIST
MEET EXIST
N/F CITY OF CAMBRIDGE
N/F CITY OF CAMBRIDGE
BENCHMARK G CHISEL SQ. ON PAD EL=26.24'
CONC. PAD w/TRAFF. BOX
AC UNIT
LAND BOULEVARD

LEGEND:

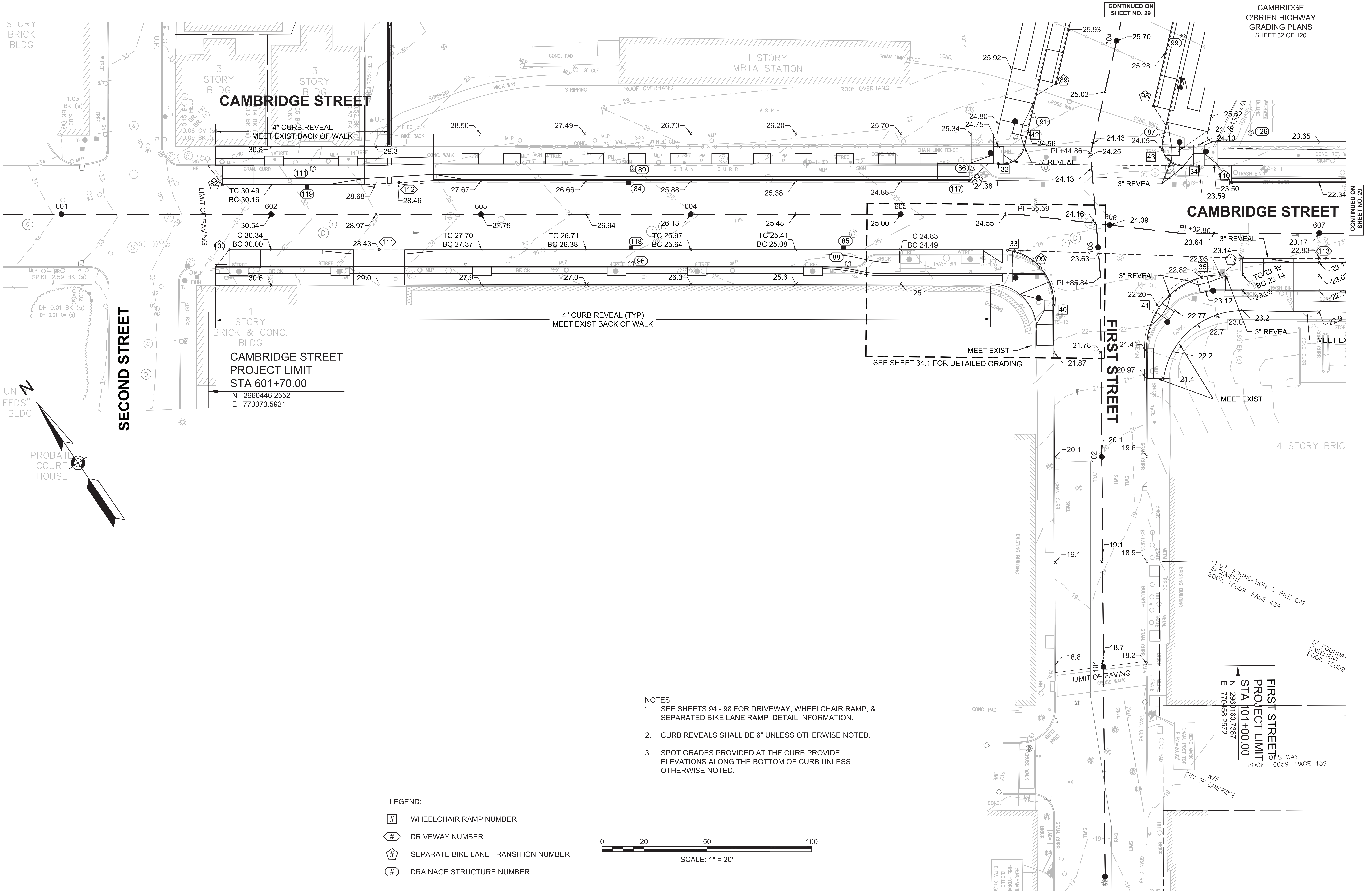
#	WHEELCHAIR RAMP NUMBER
#	DRIVEWAY NUMBER
#	SEPARATE BIKE LANE TRANSITION NUMBER
#	DRAINAGE STRUCTURE NUMBER

0 20 50 100
SCALE: 1" = 20'

11554-GRAD.DWG Plotted on 13-Jul-2021 11:55 AM

CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 32 OF 120

CONTINUED ON SHEET NO. 29



CONTINUED ON SHEET NO. 29

NOTES:

1. SEE SHEETS 94 - 98 FOR DRIVEWAY, WHEELCHAIR RAMP, & SEPARATED BIKE LANE RAMP DETAIL INFORMATION.
2. CURB REVEALS SHALL BE 6" UNLESS OTHERWISE NOTED.
3. SPOT GRADES PROVIDED AT THE CURB PROVIDE ELEVATIONS ALONG THE BOTTOM OF CURB UNLESS OTHERWISE NOTED.

LEGEND:

#	WHEELCHAIR RAMP NUMBER
⟨#⟩	DRIVEWAY NUMBER
⬠#	SEPARATE BIKE LANE TRANSITION NUMBER
(#)	DRAINAGE STRUCTURE NUMBER

0 20 50 100
SCALE: 1" = 20'

11554-GRAD - 11 FIRST ST - V2.DWG Plotted on 19-Nov-2021 2:47 PM

CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 33 OF 120

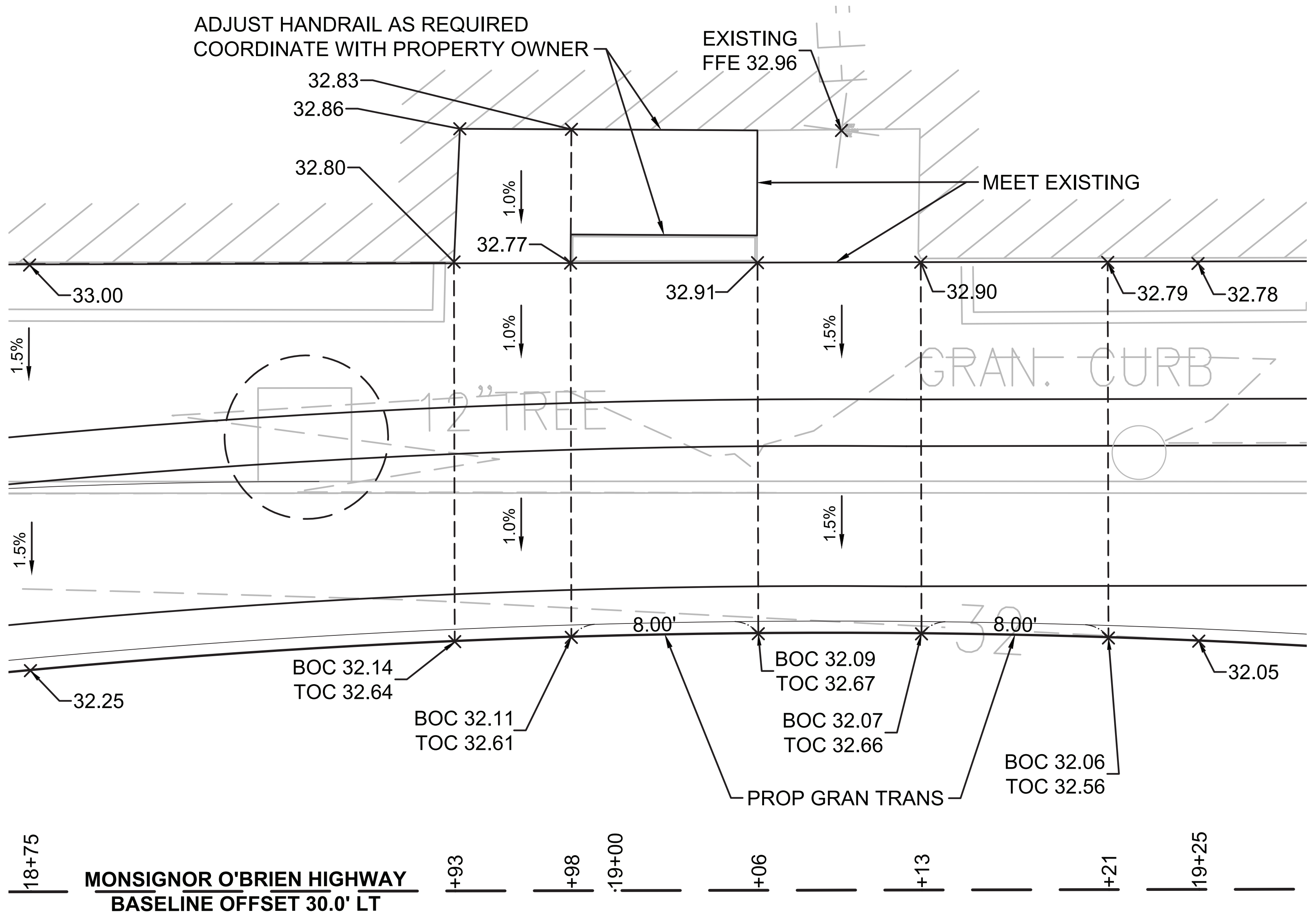
Plotted on 13-Jul-2021 11:57 AM

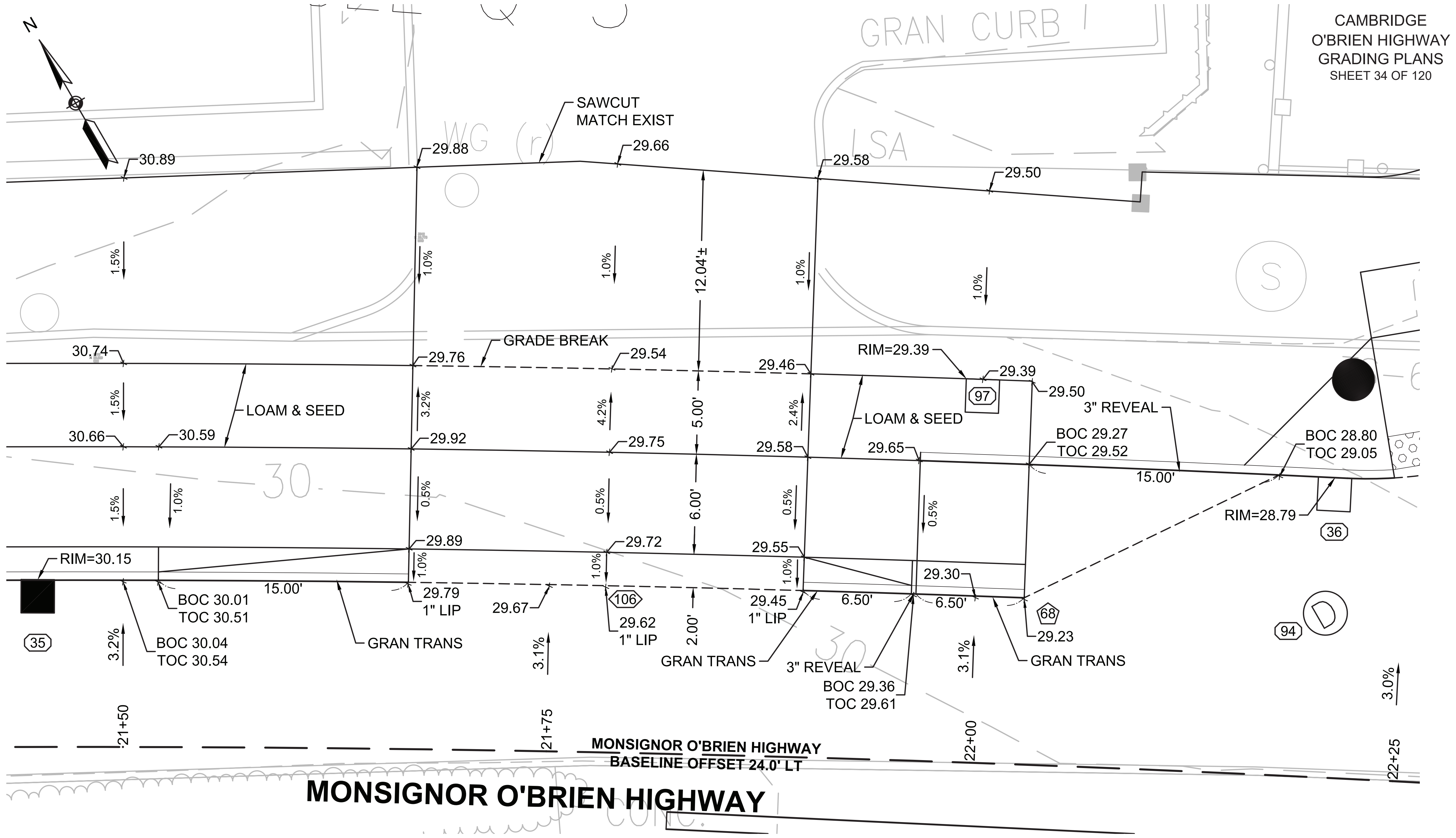
11554-DET-GRAD.DWG

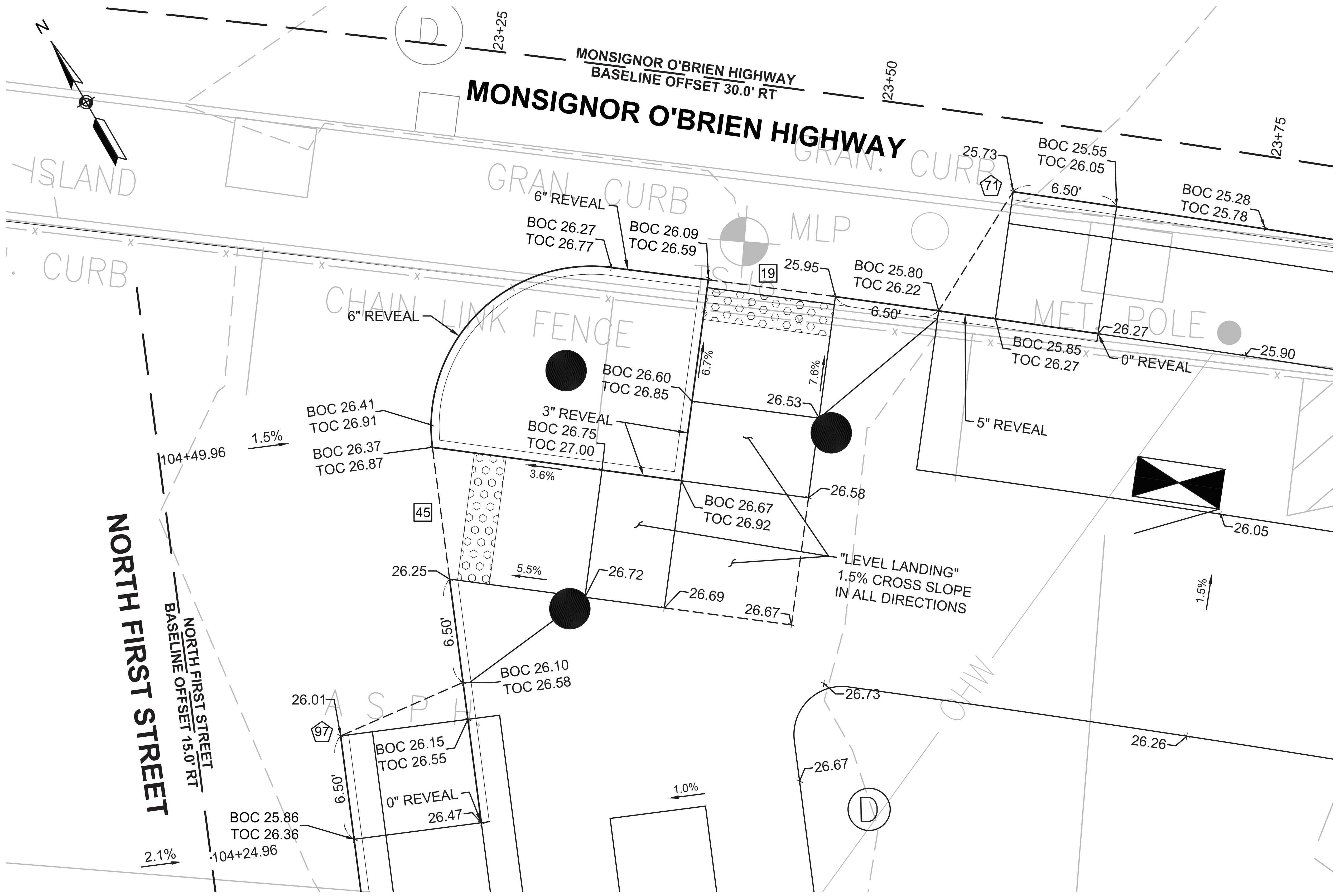
0 5 10 20 30
SCALE: 1" = 5'

NOTES:
1. SEE SHEETS 23 - 27 FOR COMPLETE CURB TIE, CURB REVEAL AND ALIGNMENT INFORMATION.
2. REFER TO WHEEL CHAIR RAMP AND DRIVEWAY DETAILS FOR ADDITIONAL GRADING & LAYOUT INFORMATION.
3. SPOT ELEVATIONS ARE PROVIDE AT +50' STATIONS UNLESS OTHERWISE NOTED.
4. ALL ELEVATIONS GIVEN ARE AT THE ROADWAY SURFACE OR BACK OF WALK UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 34 OF 120







0 5 10 20 30

SCALE: 1" = 5'

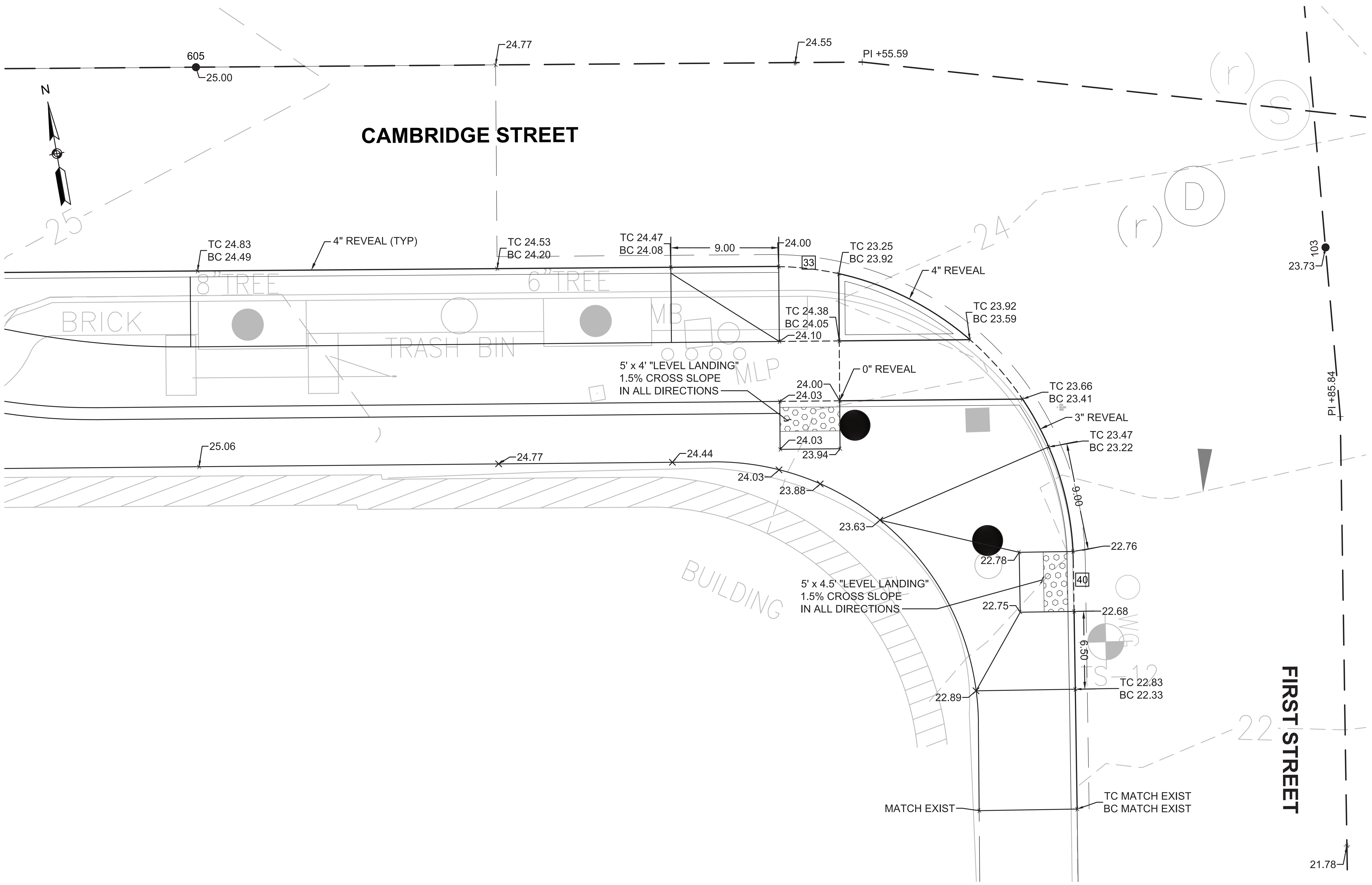
NOTES:
1. SEE SHEETS 23 - 27 FOR COMPLETE CURB TIE, CURB REVEAL AND ALIGNMENT INFORMATION.
2. REFER TO WHEEL CHAIR RAMP AND DRIVEWAY DETAILS FOR ADDITIONAL GRADING & LAYOUT INFORMATION.
3. SPOT ELEVATIONS ARE PROVIDE AT +50' STATIONS UNLESS OTHERWISE NOTED.
4. ALL ELEVATIONS GIVEN ARE AT THE ROADWAY SURFACE OR BACK OF WALK UNLESS OTHERWISE NOTED.

Plotted on 13-Jul-2021 11:57 AM

11554-DET-GRAD.DWG

CAMBRIDGE
O'BRIEN HIGHWAY
GRADING PLANS
SHEET 34.1 OF 120

11554-DET-GRAD - 11 FIRST ST - V2.DWG Plotted on 22-Nov-2021 10:46 AM



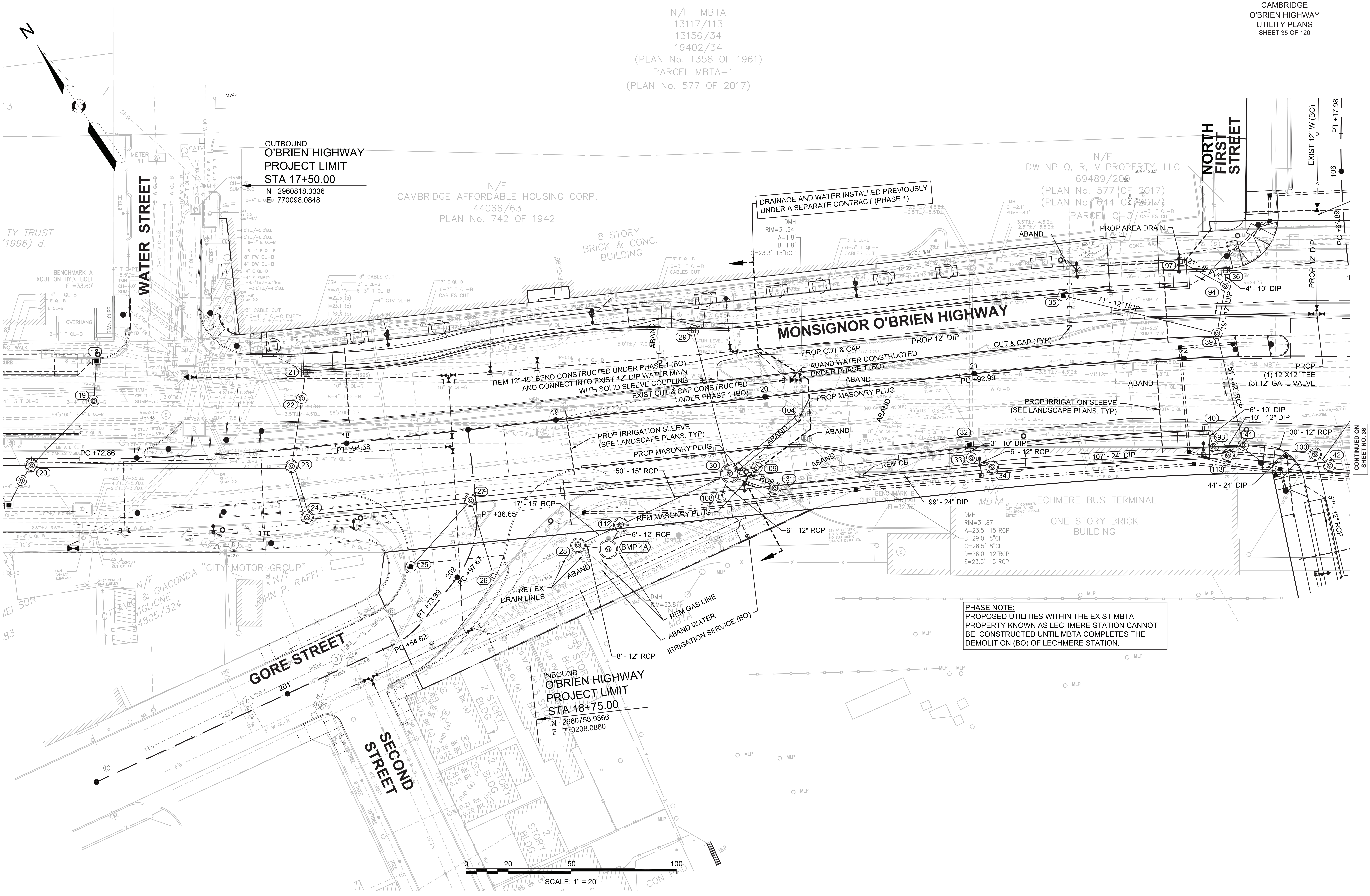
0 5 10 20 30
SCALE: 1" = 5'

NOTES:
1. SEE SHEETS 23 - 27 FOR COMPLETE CURB TIE, CURB REVEAL AND ALIGNMENT INFORMATION.
2. REFER TO WHEEL CHAIR RAMP AND DRIVEWAY DETAILS FOR ADDITIONAL GRADING & LAYOUT INFORMATION.
3. SPOT ELEVATIONS ARE PROVIDE AT +50' STATIONS UNLESS OTHERWISE NOTED.
4. ALL ELEVATIONS GIVEN ARE AT THE ROADWAY SURFACE OR BACK OF WALK UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
UTILITY PLANS
SHEET 35 OF 120

Plotted on 13-Jul-2021 3:31 PM

11554-UTIL.DWG



PHASE NOTE:
PROPOSED UTILITIES WITHIN THE EXIST MBTA PROPERTY KNOWN AS LECHMERE STATION CANNOT BE CONSTRUCTED UNTIL MBTA COMPLETES THE DEMOLITION (BO) OF LECHMERE STATION.

CAMBRIDGE
O'BRIEN HIGHWAY
UTILITY PLANS
SHEET 36 OF 120

LIMIT OF PAVING
NORTH FIRST STREET
NORTH FIRST STREET LIMIT OF PAVING STA 106+70.00
N 2960693.0115
E 770645.0240
EAST STREET LIMIT OF PAVING
N 2960519.8930
E 770815.8965
EAST STREET
MONSIGNOR O'BRIEN HIGHWAY
FIRST STREET
CAMBRIDGE STREET
N/F DW NP Q, R, V PROPE 69489/200 (PLAN No. 577 OF) (PLAN No. 644 OF) PARCEL R-2
N/F MBTA 13117/113, 13150 14199/193 (PLAN No. 1101 OF 19402/34 (PLAN No. 1358 OF 1961) PARCEL MBTA-2 (PLAN No. 577 OF 2017)
EXIST 12" W (BO)
PT +17.98
PC +64.89
PROP 12" DIP
CONNECT TO EXIST 12" WATER MAIN (BO) WITH SOLID SLEEVE COUPLING AND 12" DIP
4' - 10" DIP
19' - 12" DIP
51' - 12" RCP
PROP (1) 12"X12" TEE (3) 12" GATE VALVE
6' - 10" DIP
10' - 12" DIP
30' - 12" RCP
4' - 16" DIP
44' - 24" DIP
118' - 27" RCP
57' - 12" RCP
PI +57.19
PROP IMPERMEABLE LINER, EXTEND DOWN TO ADJACENT PIPE TRENCH
ABAND MBTA ELECTRIC (BO)
ABAND
REM UP (BO)
PROP IRRIGATION SLEEVE (SEE LANDSCAPE PLANS, TYP)
ABAND CB
ABAND DMH
8' - 10" DIP
63' - 12" DIP
64' - 27" RCP
PROP TRENCH DAM
16' - 12" RCP
48' - 12" RCP
49' - 12" RCP
BMP 3B
BMP 3A
BMP 3
23' - 12" DIP
21' - 16" DIP
31' - 30" RCP
3' - 12" RCP
PROP 12"-45° BEND
CONNECT TO EXIST 16" WATER MAIN WITH COUPLING AND 16" DIP (1) 12" GATE VALVE (1) 16"X12" REDUCER (1) 16" SOLID SLEEVE COUPLING
PROP 16" DIP (2) 16"-45° BEND
REM PIPE & GATE BOX
CUT & CAP (TYP)
PRC +84.85
SEE INSET FOR CONNECTION DETAIL "A" & "C"
REM SMH
ABAND CB
16' - 12" DIP
13' - 12" DIP
24' - 12" DIP
14' - 10" DIP
26' - 10" DIP
29' - 10" DIP
PROP 16"-22.5° BEND
PCC +10.13
106' - 30" RCP
REM CB
REM DMH
63' - 30" RCP
92' - 12" DIP
32' - 10" DIP
PROP 16" DIP
PROP IRRIGATION SLEEVE (SEE LANDSCAPE PLANS, TYP)
26' - 30" RCP
PC +78.78
REM SEWER
ABAND CB
13' - 6" PVC
PROP 6" DIP (1) 16"X6" TEE (1) 6" GATE VALVE (1) R&R HYD
CONTRACTOR TO CORE SEWER CHIMNEY INVERT IN FIELD. EXISTING INVERT OUT AT ELEVATION 13.7' +/-
13' - 10" DIP
44' - 6" PVC
PROP MASONRY PLUG
PROP 6" DIP (1) 6" COUPLING (1) 6"-45° BEND (1) R&R HYD
ABAND DMH
ABAND CB
CONVERT EX CB TO DMH REM F&C PROP F&C PROP HOOD RET SUMP
PI +44.86
PI +32.80
PI +55.59
PROP IRRIGATION SLEEVE (SEE LANDSCAPE PLANS, TYP)
CONNECT TO EXIST 16" WATER MAIN WITH COUPLING AND 16" DIP (1) 16"X16" TEE (3) 16" BUTTERFLY VALVE (1) 16"X12" REDUCER (2) 16"-45° BEND
CONNECT TO EXIST 16" WATER MAIN WITH COUPLING AND 16" DIP (1) 16"X16" TEE (1) 16"X12" REDUCER (1) 16" BUTTERFLY VALVE
SEE INSET FOR CONNECTION DETAIL "B"
PROP (1) R&R HYD (1) 6" GATE VALVE
PROP 6" DIP
DRAINAGE AND WATER INSTALLED PREVIOUSLY UNDER A SEPARATE CONTRACT (PHASE 2A)
REM PHASE 2A MASONRY PLUG
REM PHASE 2A CAP AND CONNECT INTO 6" DIP; GATE VALVE (BO)
REM PHASE 2A MASONRY PLUG
REM PHASE 2A CAP AND CONNECT INTO 16" DIP
REM PHASE 2A CAP AND CONNECT INTO 16" DIP
BMP 1
BMP 2
BENCHMARK D XCUT ON HYD. BOLT EL=23.81'
N/F TWO CANAL PARK, LLC 47840/24
5' FOUNDATION EASEMENT BOOK 16059
4 STORY BRICK BLDG
CONTINUED ON SHEET NO. 35
CONTINUED ON SHEET NO. 37
CONTINUED ON SHEET NO. 39
CONTINUED ON SHEET NO. 39
12" DIP
16" SOLID SLEEVE COUPLING
16" DIP
16"X12" REDUCER
12" GATE VALVE
12"-45° BEND
CUT & CAP
REM EXIST GATE BOX
CUT & CAP
16" DIP
16"-45° BEND
REM EXIST TEE AND PIPE
16"X16" TEE
16" BUTTERFLY VALVE
16" BUTTERFLY VALVE
16" SOLID SLEEVE COUPLING
12" DIP
16" DIP
12" SOLID SLEEVE COUPLING
16"X12" REDUCER
REM EXIST 16"X12" REDUCER
CUT & CAP (TYP)
ABAND
16" BUTTERFLY VALVE
16"X16" TEE
16" BUTTERFLY VALVE
16"X12" REDUCER
12" SOLID SLEEVE COUPLING
16" BUTTERFLY VALVE
(2) 16"-45° BEND
0 20 50 100
SCALE: 1" = 20'
N

CONNECTION DETAIL "A" & "C"

NTS

CONNECTION DETAIL "B"

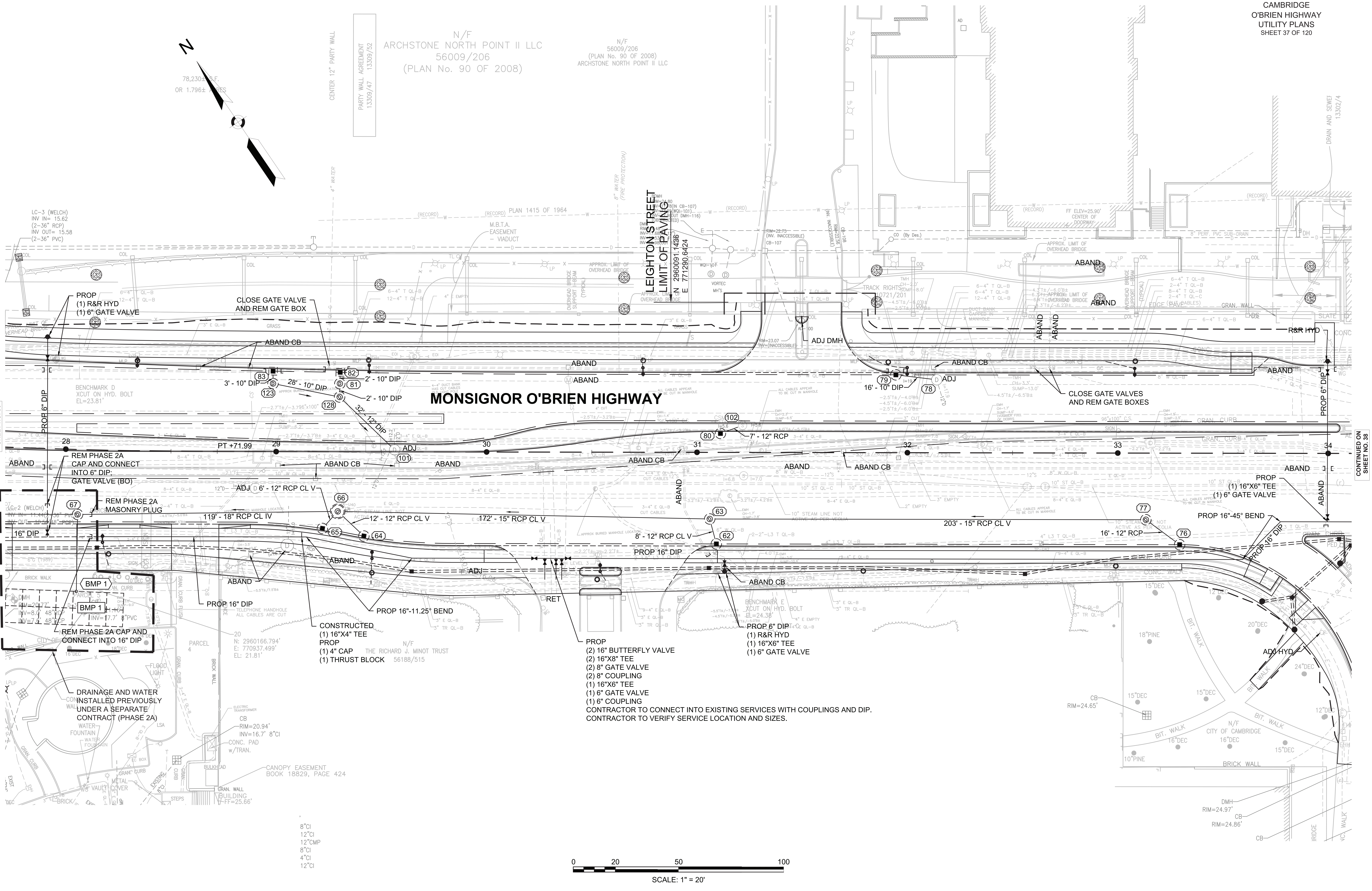
NTS

PHASE NOTE:
PROPOSED UTILITIES WITHIN THE EXIST MBTA PROPERTY KNOWN AS LECHMERE STATION CANNOT BE CONSTRUCTED UNTIL MBTA COMPLETES THE DEMOLITION (BO) OF LECHMERE STATION.

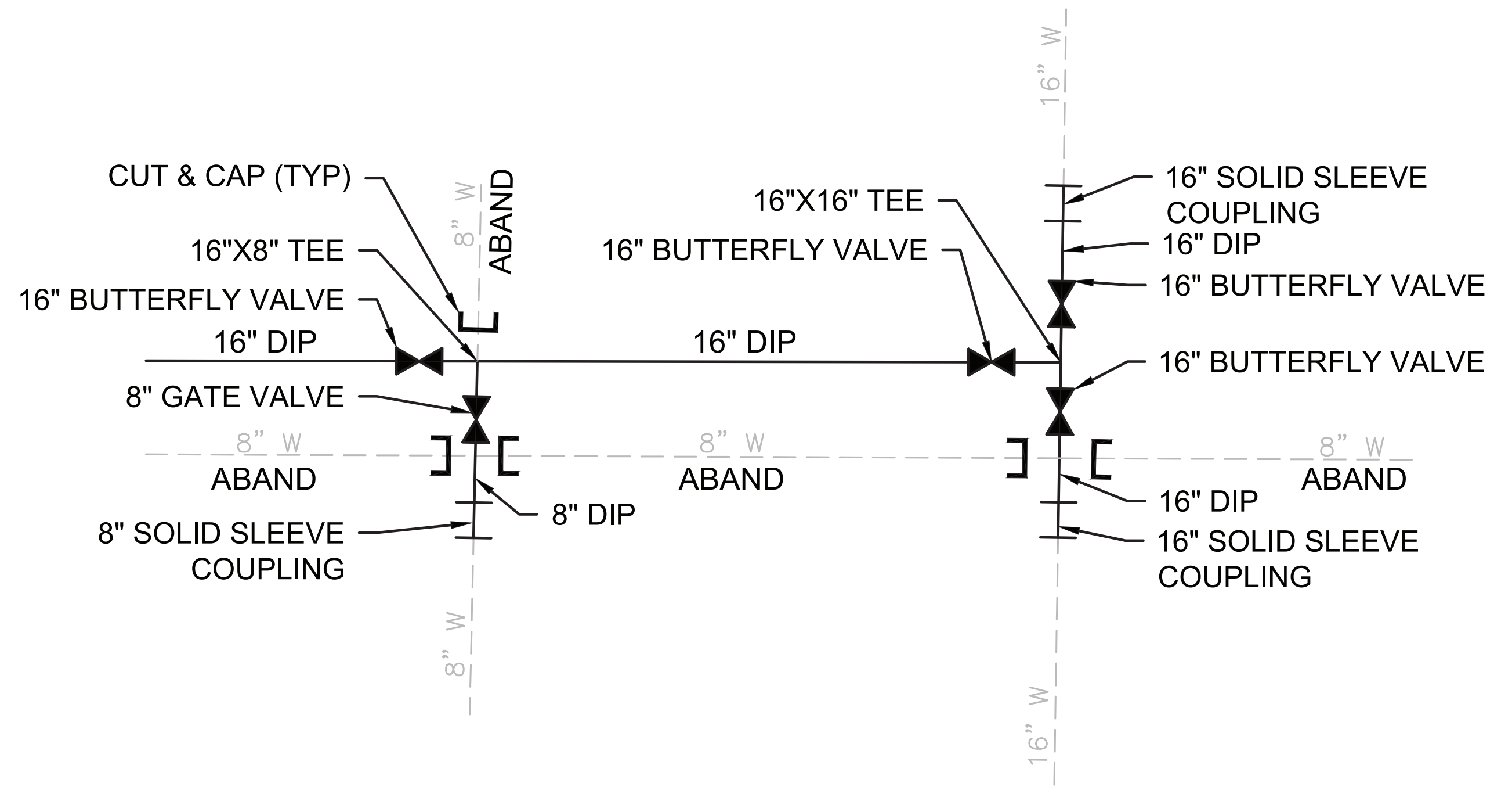
PROPOSED BMP 3 NOTE:
3,840 SQ. FT. INFILTRATION GALLERY (30- 16'L X 8' W X 2'H UNITS)
SEE DETAIL FOR PRECAST MODULAR INFILTRATION SYSTEM
BOTTOM ELEV OF GALLERY: 18.5'
SURFACE ELEV: TBD

CAMBRIDGE
O'BRIEN HIGHWAY
UTILITY PLANS
SHEET 37 OF 120

11554-UTIL.DWG Plotted on 13-Jul-2021 12:00 PM

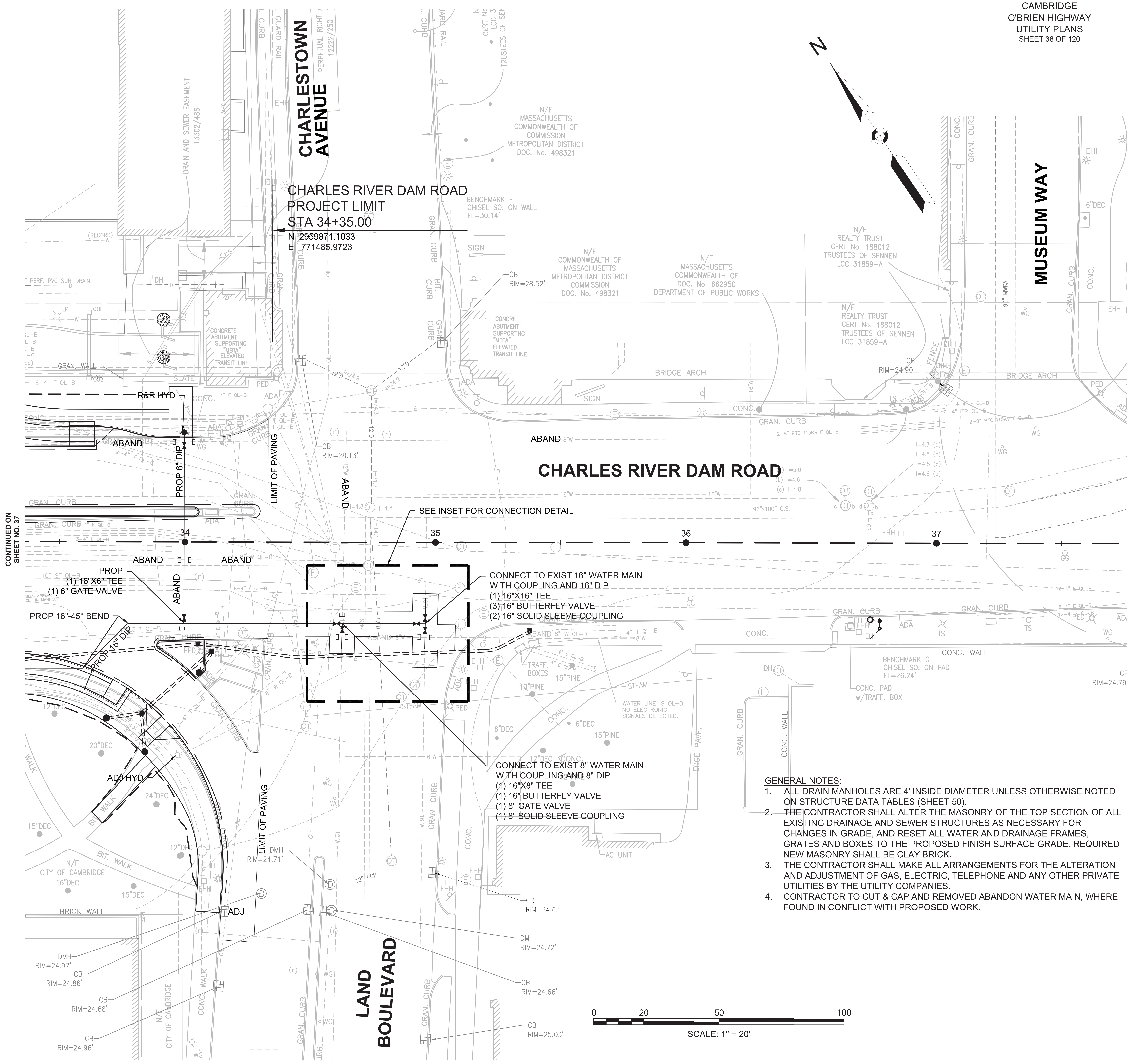


CAMBRIDGE
O'BRIEN HIGHWAY
UTILITY PLANS
SHEET 38 OF 120



CONNECTION DETAIL

NTS


CHARLESTOWN AVENUE
CHARLES RIVER DAM ROAD PROJECT LIMIT STA 34+35.00
N 2959871.1033
E 771485.9723
MUSEUM WAY
CHARLES RIVER DAM ROAD
LAND BOULEVARD
CONTINUED ON SHEET NO. 37
N/F MASSACHUSETTS COMMONWEALTH OF COMMISSION METROPOLITAN DISTRICT DOC. No. 498321
N/F COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 498321
N/F MASSACHUSETTS COMMONWEALTH OF DOC. No. 662950 DEPARTMENT OF PUBLIC WORKS
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F CITY OF CAMBRIDGE
BENCHMARK F CHISEL SQ. ON WALL EL=30.14'
BENCHMARK G CHISEL SQ. ON PAD EL=26.24'
CONCRETE ABUTMENT SUPPORTING "MBTA" ELEVATED TRANSIT LINE
DRAIN AND SEWER EASEMENT 13302/486
PERPETUAL RIGHT 12222/250
R&R HYD
ADJ HYD
ADJ
PROP 6" DIP
PROP (1) 16"X6" TEE (1) 6" GATE VALVE
PROP 16"-45° BEND
PROP 16" DIP
ABAND
LIMIT OF PAVING
SEE INSET FOR CONNECTION DETAIL
CONNECT TO EXIST 16" WATER MAIN WITH COUPLING AND 16" DIP (1) 16"X16" TEE (3) 16" BUTTERFLY VALVE (2) 16" SOLID SLEEVE COUPLING
CONNECT TO EXIST 8" WATER MAIN WITH COUPLING AND 8" DIP (1) 16"X8" TEE (1) 16" BUTTERFLY VALVE (1) 8" GATE VALVE (1) 8" SOLID SLEEVE COUPLING
WATER LINE IS QL-D NO ELECTRONIC SIGNALS DETECTED.
34
35
36
37
CB RIM=28.52'
CB RIM=28.13'
CB RIM=24.90'
CB RIM=24.79
DMH RIM=24.71'
DMH RIM=24.97'
CB RIM=24.86'
CB RIM=24.68'
CB RIM=24.96'
CB RIM=24.63'
DMH RIM=24.72'
CB RIM=24.66'
CB RIM=25.03'
BRIDGE ARCH
GRAN. CURB
CONC. WALL
BRICK WALL
CONC. PAD w/TRAFF. BOX
TRAFF. BOXES
AC UNIT
N

GENERAL NOTES:

1. ALL DRAIN MANHOLES ARE 4' INSIDE DIAMETER UNLESS OTHERWISE NOTED ON STRUCTURE DATA TABLES (SHEET 50).
2. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK.
3. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
4. CONTRACTOR TO CUT & CAP AND REMOVED ABANDON WATER MAIN, WHERE FOUND IN CONFLICT WITH PROPOSED WORK.

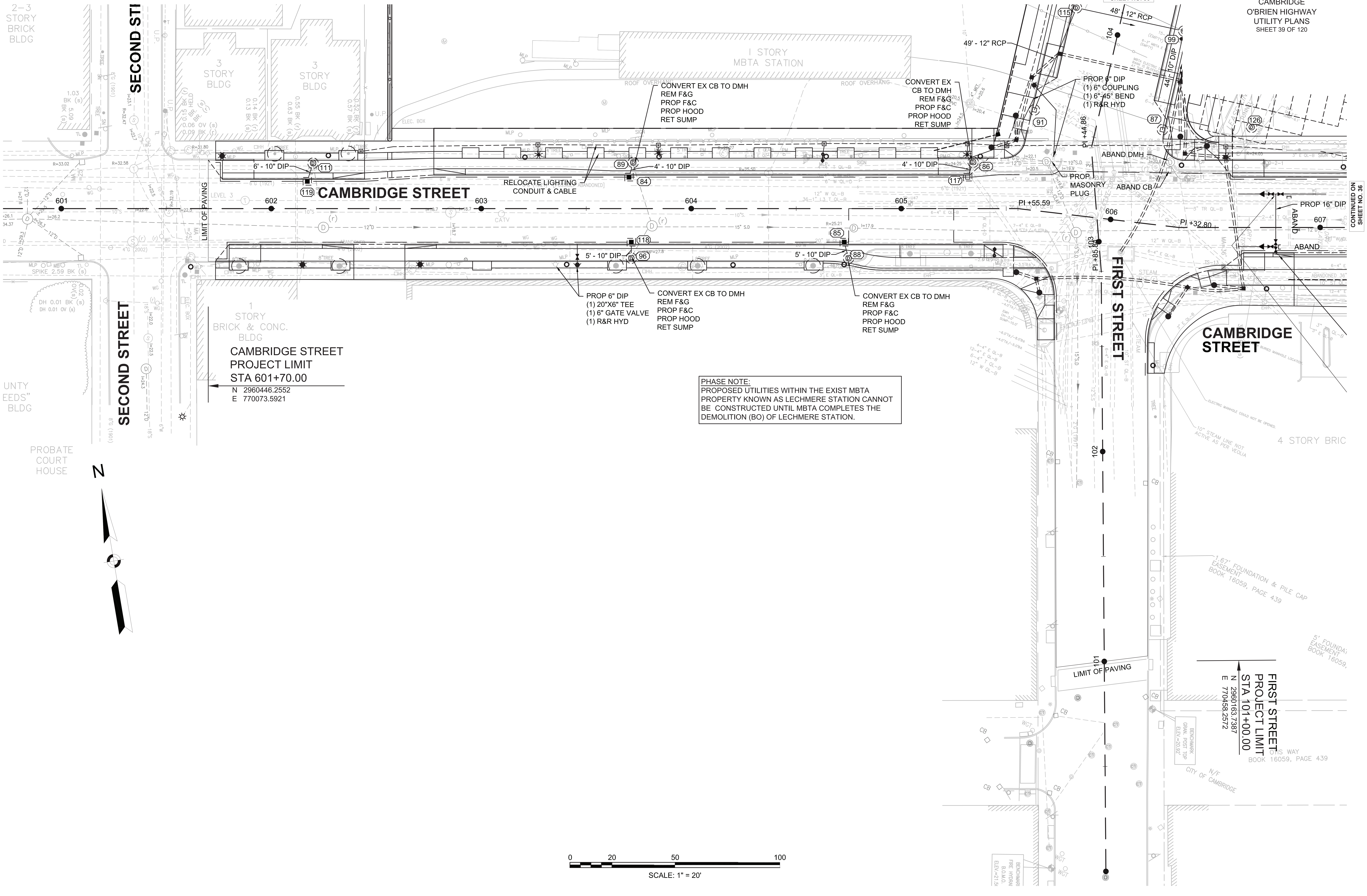
0 20 50 100

SCALE: 1" = 20'

11554-UTIL.DWG Plotted on 13-Jul-2021 12:00 PM

CAMBRIDGE
O'BRIEN HIGHWAY
UTILITY PLANS
SHEET 39 OF 120

CONTINUED ON SHEET NO. 36



PHASE NOTE:
PROPOSED UTILITIES WITHIN THE EXIST MBTA PROPERTY KNOWN AS LECHMERE STATION CANNOT BE CONSTRUCTED UNTIL MBTA COMPLETES THE DEMOLITION (BO) OF LECHMERE STATION.

11554-UTIL - 11 FIRST ST - V2.DWG Plotted on 19-Nov-2021 4:16 PM

ALGN - OBRIEN HWY DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
BMP 4A	BMP 4	19+18.0 63.8 RT	33.12	(28) 23.50	(112) 23.00	8' DIA CONTECH "JELLYFISH"
BMP 3A	BMP 3	24+42.1 71.0 RT	--	(52) 19.10		
BMP 3B	BMP 3	23+50.6 89.0 RT	--	(99) 19.00		
21	GI	17+84.0 35.4 LT	31.91		(22) 29.42	CONSTRUCTED UNDER PHASE 1 CONTRACT (BO). ADJ RIM TO FINISH GRADE.
22	DMH	17+80.9 23.5 LT	32.29	(21) 29.30	(23) 28.70	CONSTRUCTED UNDER PHASE 1 CONTRACT (BO). ADJ RIM TO FINISH GRADE.
28	DMH	19+03.9 60.3 RT	33.73	(EX) 27.50 (EX) 27.30 (EX) 24.10	(112) 24.10 (BMP 4A) 23.60	REM EXIST DMH, 6' DIA DMH
29	CB	19+69.7 35.0 LT	31.94		(30) 25.00	CONSTRUCTED UNDER PHASE 1 CONTRACT (BO). REPLACE F/C WITH F/G AND ADJ RIM TO FINISH GRADE.
30	DMH	19+79.4 34.4 RT	ADJ	(27) 18.70 (109) 27.40 (108) 27.50 (112) 22.60 (29) 24.50	(31) 18.60 (104) 18.60	CONSTRUCTED UNDER PHASE 1 CONTRACT (BO). ADJ RIM TO FINISH GRADE.
31	DMH	19+99.9 43.6 RT	32.60	(30) 18.40	(34) 18.30	5' DIA DMH
32	GICI	20+94.0 33.5 RT	31.42		(33) 28.85	
33	DMH	20+94.4 39.8 RT	31.44	(32) 28.80	(34) 26.70	6' SUMP, HOOD
34	DMH	21+03.9 45.0 RT	31.41	(33) 26.55 (31) 17.90	(113) 17.85	5' DIA DMH
35	CBCI	21+45.0 33.0 LT	30.15		(39) 23.60	HOOD
36	GI	22+20.7 41.0 LT	28.79		(94) 26.28	SPECIAL GI TYPE A
~~37~~	~~CB~~	~~22+91.6~~ ~~82.1 LT~~	~~26.51~~		~~(38) 25.60~~	~~HOOD, SC~~
~~38~~	~~DMH~~	~~22+91.8~~ ~~35.2 LT~~	~~26.24~~	~~(37) 25.30~~	~~(39) 24.70~~	~~SC~~
39	DMH	22+16.0 11.3 LT	29.80	(94) 25.90 (35) 22.70 ~~(38) 23.90~~	(41) 22.30	
40	GI	22+09.7 33.5 RT	29.48		(93) 26.90	SPECIAL GI TYPE B
41	DMH	22+27.3 42.0 RT	28.98	(39) 21.54 (93) 26.20	(100) 21.50	SC
42	DMH	22+69.7 52.0 RT	27.91	(113) 17.10 (100) 20.30	(44) 17.05	5' DIA DMH
43	GICI	23+97.0 33.5 RT	24.68		(95) 22.60	SPECIAL GI TYPE A
44	DMH	23+97.5 58.7 RT	25.44	(42) 16.55	(53) 16.50	5' DIA DMH
45	GI	24+51.4 43.5 LT	23.57		(116) 21.47 ~~(46) 21.47~~	SPECIAL GI TYPE A
~~46~~	~~DMH~~	~~24+58.5~~ ~~9.3 RT~~	~~23.52~~	~~(45) 21.20~~	~~(52) 21.10~~	~~6' SUMP, HOOD, SC~~
47	CBCI	25+71.0 49.5 LT	21.29		(49) 18.85	HOOD, SC
48	CB	25+96.2 49.5 LT	21.13		(49) 18.90	HOOD, SC
49	DMH	25+95.4 31.4 LT	21.44	(48) 18.70 (114) 18.70 (47) 18.75	(110) 17.90	SC
50	CB	25+83.2 38.5 RT	21.25		(51) 18.30	HOOD, SC
51	DMH	26+02.2 31.7 RT	21.35	(50) 18.00	(60) 17.90	SC
52	DMH	24+65.2 59.0 RT	23.47	(95) 20.50 ~~(46) 20.70~~	(53) 20.50 (BMP 3A) 19.40	5' DIA DMH, SC
53	DMH	24+69.6 65.6 RT	23.35	(44) 16.20 (52) 20.30	(54) 16.15	5' DIA DMH, SC
54	DMH	25+06.1 68.2 RT	22.14	(53) 16.00 (55) 19.20	(59) 12.35	6' DIA DMH, SC

ALGN - OBRIEN HWY DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
55	CBCI	24+84.0 81.3 RT	22.17		(54) 19.80	HOOD, SC
58	GICI	25+06.3 117.7 RT	22.15		(120) 19.50	
59	DMH	25+26.6 92.3 RT	22.03	(54) 12.20	(60) 12.15	6' DIA DMH, SC
60	DMH	26+19.2 33.6 RT	21.32	(59) 11.65 (110) 15.70 (51) 17.70	(61) 11.60	5' DIA DMH
61	DMH	26+86.6 34.5 RT	21.67	(60) 11.25	(71) 11.20	5' DIA DMH
62	CBCI	31+09.3 43.5 RT	21.64		(63) 18.00	HOOD, SC
63	DMH	31+06.1 31.7 RT	21.87	(62) 17.90 (77) 18.10	(66) 17.90	
64	CBCI	29+41.7 40.0 RT	20.74		(66) 17.10	HOOD
65	CBCI	29+22.0 36.5 RT	20.70		(66) 17.10	HOOD
66	DMH	29+29.3 28.3 RT	20.96	(64) 17.00 (65) 17.00 (63) 17.20	(67) 16.95	6' DIA DMH
67	DMH	28+06.4 30.9 RT	21.42	(66) 16.35	(BMP 1) 13.30 (71) 16.30	CONSTRUCTED UNDER PHASE 2A CONTRACT (BO). ADJ RIM TO FINISH GRADE.
68	GICI	26+12.6 58.9 RT	20.99		(69) 18.50	SPECIAL GI TYPE A
69	DMH	26+45.2 47.2 RT	21.16	(68) 18.40	(70) 17.80	6' SUMP, HOOD, SC
70	DMH	27+38.9 38.7 RT	22.13	(69) 17.30	(BMP 2) 13.30 (71) 15.20	CONSTRUCTED UNDER PHASE 2A CONTRACT (BO). ADJ RIM TO FINISH GRADE.
71	DMH	27+55.4 32.5 RT	21.69	(61) 10.85 (67) 16.00 (70) 15.10	(72) 10.80	CONSTRUCTED UNDER PHASE 2A CONTRACT (BO). ADJ RIM TO FINISH GRADE.
76	CBCI	33+29.5 43.5 RT	24.69		(77) 19.60	HOOD
77	DMH	33+13.4 31.7 RT	24.60	(76) 19.45	(63) 19.20	
78	EX DMH	32+13.9 34.7 LT	23.03	(79) 18.00		ADJ
79	CBCI	31+94.5 37.0 LT	22.76		(78) 18.10	HOOD
80	CBCI	31+11.1 9.0 LT	22.40		(102) 17.00	HOOD
81	DMH	29+30.2 32.4 LT	21.17	(82) 18.50	(128) 18.40	6' SUMP, HOOD, SC
82	GICI	29+30.4 37.8 LT	21.10		(81) 18.60	
83	GICI	28+98.5 38.2 LT	20.88		(123) 18.30	
84	GICI	20+87.8 261.0 RT	26.26	(89) 23.60		SPECIAL GI TYPE A
85	GICI	22+15.7 253.9 RT	24.83		(88) 22.40	SPECIAL GI TYPE A
86	EX CB	22+63.4 194.1 RT	24.67	(117) 22.00		RET SUMP, HOOD, F&C
87	CB	23+46.5 140.1 RT	24.27		(99) 20.00	HOOD
88	EX CB	22+21.6 260.1 RT	25.21	(85) 22.30		RET SUMP, HOOD, F&C
89	EX CB	20+87.5 253.7 RT	26.79		(84) 23.70	RET SUMP, HOOD, F&C
91	CB	22+81.3 159.2 RT	24.82		(115) 21.00	HOOD
93	DMH	22+12.7 42.3 RT	29.97	(40) 26.80	(41) 26.50	6' SUMP, HOOD, SC
94	DMH	22+20.6 33.9 LT	29.01	(36) 26.20 (97) 26.20	(39) 26.10	6' SUMP, HOOD, SC

ALGN - OBRIEN HWY DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
95	DMH	23+97.2 44.9 RT	25.30	(43) 22.50	(52) 22.20	6' SUMP, HOOD, SC
96	EX CB	21+03.0 297.2 RT	26.40	(118) 23.50		RET SUMP, HOOD, F&C
97	AREA DRAIN	22+00.0 46.0 LT	29.39		(94) 26.50	
99	DMH	23+32.5 93.8 RT	26.08	(115) 19.10 (87) 19.20	(BMP 3B) 19.10	
100	DMH	22+62.5 46.6 RT	28.11	(41) 21.30	(42) 20.50 (115) 19.90	5' DIA DMH
101	EX DMH	29+56.3 0.9 LT	22.12	(128) 17.30		ADJ
102	EX DMH	31+21.7 12.8 LT	22.92	(80) 16.80		REMOD
109	CB	19+92.5 33.0 RT	ADJ		(30) 27.60	CONSTRUCTED UNDER PHASE 1 CONTRACT (BO). ADJ RIM TO FINISH GRADE.
110	DMH	26+22.6 5.6 RT	21.89	(49) 17.40	(60) 16.00	
111	EX CB	19+42.9 302.1 RT	29.99	(119) 27.60		RET SUMP; HOOD; F&C
112	DMH	19+25.2 52.9 RT	33.97	(BMP 4A) 22.90 (28) 24.00	(30) 22.80	6' DIA DMH
113	DMH	22+19.7 46.8 RT	29.71	(34) 17.32	(42) 17.32	
114	CBCI	26+24.4 41.5 LT	21.31		(49) 18.90	6' SUMP, HOOD, SC
115	DMH	22+78.2 106.6 RT	26.19	(100) 19.50 (91) 19.50	(99) 19.50	
116	EX DMH	24+41.4 46.0 LT	24.62	(45) 21.40		ADJ
117	GI	22+64.2 201.7 RT	24.57		(86) 22.10	SPECIAL GI TYPE A
118	GICI	20+99.9 290.0 RT	26.01		(96) 23.60	SPECIAL GI TYPE A
119	GICI	19+43.0 311.1 RT	30.10		(111) 27.70	SPECIAL GI TYPE A
120	EX CB	25+16.3 129.4 RT	22.63	(58) 19.40 (121) 19.40 (122) 19.00		RET SUMP, HOOD, ADJ F&G
121	AREA DRAIN	24+78.3 154.8 RT	22.50		(120) 20.00	
122	AREA DRAIN	25+75.8 86.1 RT	21.90		(120) 19.50	
123	DMH	28+98.4 32.4 LT	21.05	(83) 18.20	(128) 18.10	6' SUMP, HOOD, SC
124	BMP 3	23+55.1 73.9 RT	26.65			ACCESS PORT, F&C
125	BMP 3	23+58.3 91.2 RT	26.35			ACCESS PORT, F&C
126	BMP 3	23+86.6 118.5 RT	24.10			ACCESS PORT, F&C
127	BMP 3	24+37.1 76.8 RT	24.00			ACCESS PORT, F&C
128	DMH	29+30.1 26.0 LT	21.24	(123) 17.80 (81) 18.30	(101) 17.70	

NOTE:
1. SEE SHEET 86 FOR CATCH BASIN SHALLOW COVER (SC) DETAIL.
2. SEE SHEET 86 FOR SPECIAL GI DETAIL.

PHASE NOTE:
PROPOSED UTILITIES WITHIN THE EXIST MBTA PROPERTY KNOWN AS LECHMERE STATION CANNOT BE CONSTRUCTED UNTIL MBTA COMPLETES THE DEMOLITION (BO) OF LECHMERE STATION.

CAMBRIDGE
O'BRIEN HIGHWAY
DRAINAGE PROFILE
SHEET 41 OF 120

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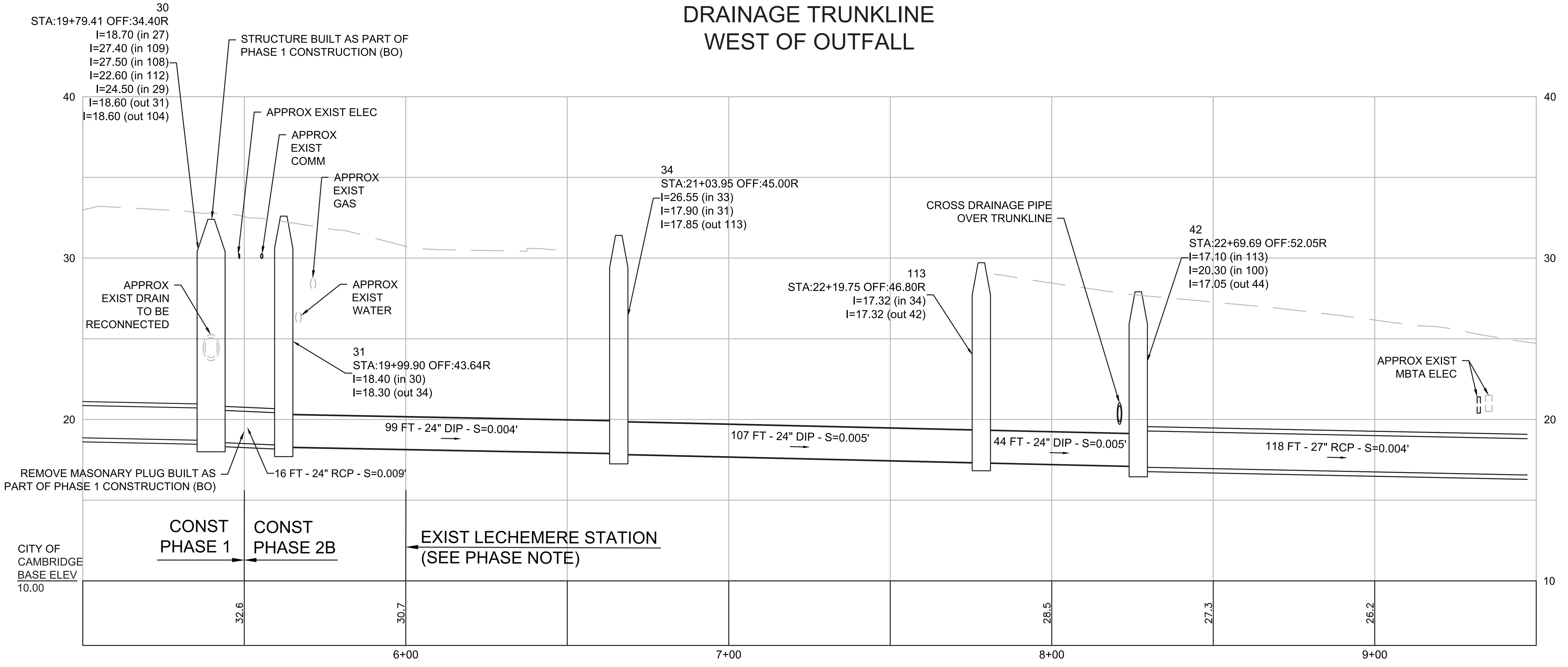
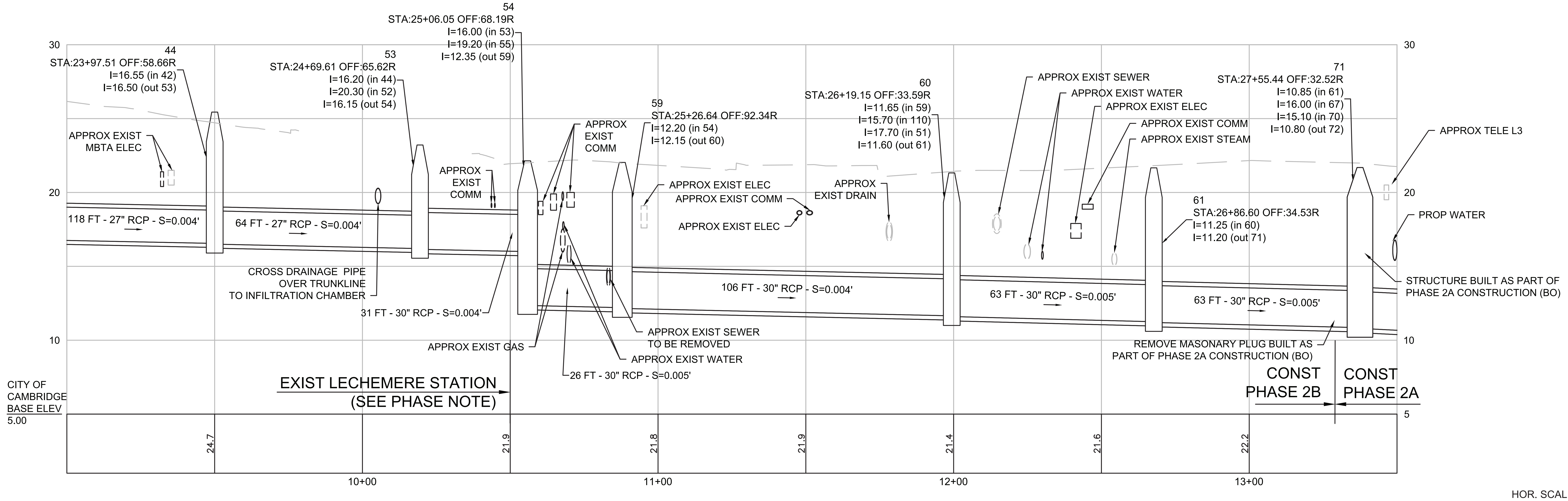
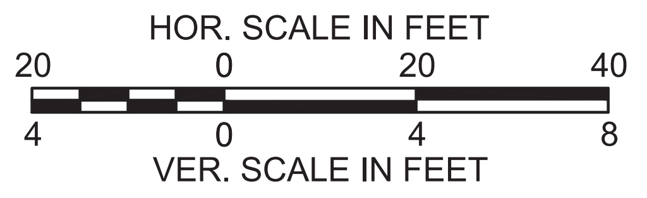
DRAINAGE TRUNKLINE
WEST OF OUTFALL





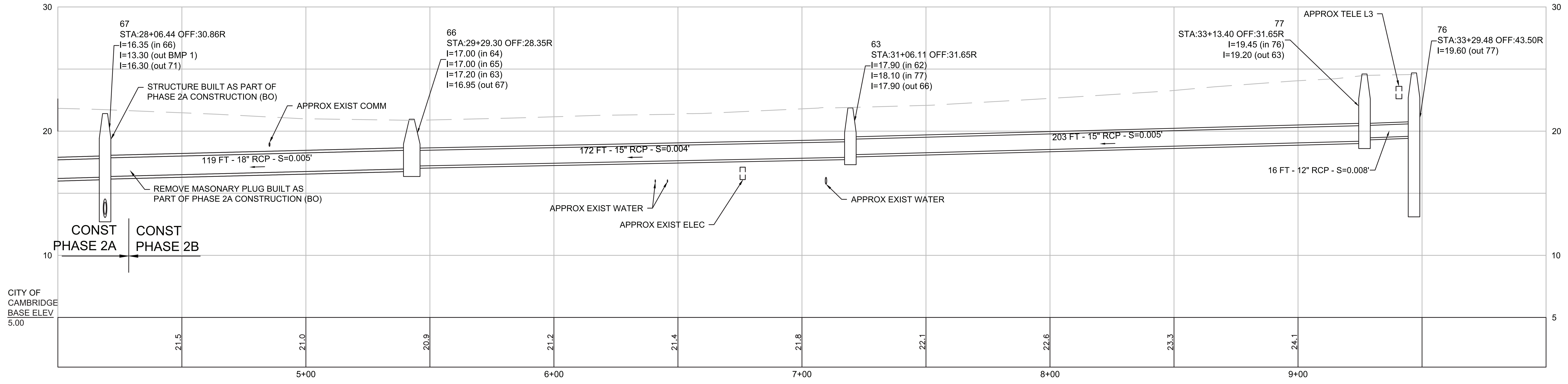
PHASE NOTE:
PROPOSED TRUNK LINE BETWEEN STRUCTURE 31 AND
54 CANNOT BE CONSTRUCTION UNTIL MBTA COMPLETES
DEMOLITION OF LECHMERE STATION



CAMBRIDGE
O'BRIEN HIGHWAY
DRAINAGE PROFILE
SHEET 42 OF 120

11554-PROF-UTIL.DWG Plotted on 13-Jul-2021 12:02 PM

DRAINAGE TRUNKLINE
EAST OF OUTFALL



CAMBRIDGE
O'BRIEN HIGHWAY
LANDSCAPE PLANS
SHEET 43 OF 120

IRRIGATION SYSTEM 2" SERVICE POINT OF CONNECTION CONTRACTOR SHALL FURNISH AND INSTALL WATER PIPE FROM 2" SERVICE AND CURBSTOP, WATER METER, BACKFLOW PREVENTER, ENCLOSURE WITH HEAT TRACE, IRRIGATION CONTROLLER AND EXTERIOR CABINET, AND ALL APPURTENANCES REQUIRED FOR A COMPLETE AND FUNCTIONING IRRIGATION SYSTEM FOR ZONES IDENTIFIED IN THE PLANTING PLANS TO RECEIVE IRRIGATION.

FINAL LOCATION OF METER, BACKFLOW PREVENTER, CONTROLLER, AND ENCLOSURES SHALL BE AS DIRECTED BY OWNER'S REPRESENTATIVE IN THE FIELD.

NOTE:

SEE SHEET 46 FOR PLANT SCHEDULE.

IRRIGATION NOTES:

CONTRACTOR SHALL PROVIDE DESIGN/BUILD IRRIGATION SYSTEM TO SERVICE ZONES INDICATED, INCLUDING WITHIN SIDEWALK TREEWAYS.

POINT OF CONNECTION SHALL BE AT A STUBBED WATER LINE PREVIOUSLY INSTALLED AT APPROXIMATELY STA 20+00 65RT, NEAR THE EASTERN CORNER OF THE MONSIGNOR O'BRIEN HIGHWAY AND GORE STREET INTERSECTION..

CONTRACTOR SHALL PROVIDE ALL EQUIPMENT FOR THE WATER STUB OUT POINT OF CONNECTION, INCLUDING WATER METER, BACKFLOW PREVENTER, HEATED ENCLOSURE WITH HEAT TRACE, IN ACCORDANCE WITH THE SPECIFICATIONS AND REQUIREMENTS OF THE CITY OF CAMBRIDGE WATER DEPARTMENT.

WITHIN ZONES INDICATED TO BE IRRIGATED, PROVIDE DRIP IRRIGATION FOR ALL SHRUB, PERENNIAL, AND GROUNDCOVER PLANTED AREAS, PROVIDE BUBBLERS FOR ALL TREES, PROVIDE SUB-SURFACE DRIP IRRIGATION WITHIN AERATION TUBES AS INDICATED FOR TREEWAY PLANTINGS, AND PROVIDE SPRAY HEAD OR ROTARY HEAD IRRIGATION FOR LAWN AREAS.

UTILITY AND LANDSCAPE PLANS INDICATE APPROXIMATE SLEEVE LOCATIONS, INCLUDING APPROXIMATE LOCATIONS OF SLEEVES INSTALLED BY SEPERATE PHASE 1 CONTRACT. CONTRACTOR SHALL PROVIDE IRRIGATION SLEEVES TO ALL AREAS TO BE IRRIGATED AND SHALL PROVIDE SPARE SLEEVES AS INDICATED OUTSIDE OF IRRIGATED AREAS TO ALLOW FOR FUTURE IRRIGATION BY OTHERS.

APPROXIMATE LOCATIONS FOR IRRIGATION SLEEVES ARE INDICATED SCHEMATICALLY ON THESE DRAWINGS. NOTE THAT ONLY SELECTED SCHEMATIC SLEEVES HAVE BEEN LABELED. FINAL SLEEVE LOCATIONS, QUANTITY AND SIZE TO BE AS DETERMINED BY DESIGN/BUILD IRRIGATION SUB-CONTRACTOR. LOCATIONS MAY BE ADJUSTED DUE TO ENCOUNTERED SUBSURFACE UTILITIES. CONTRACTOR SHALL PROVIDE ADDITIONAL SLEEVES AS MAY BE REQUIRED BY FINAL IRRIGATION DESIGN UNDER THE DESIGN-BUILD SUBCONTRACT.

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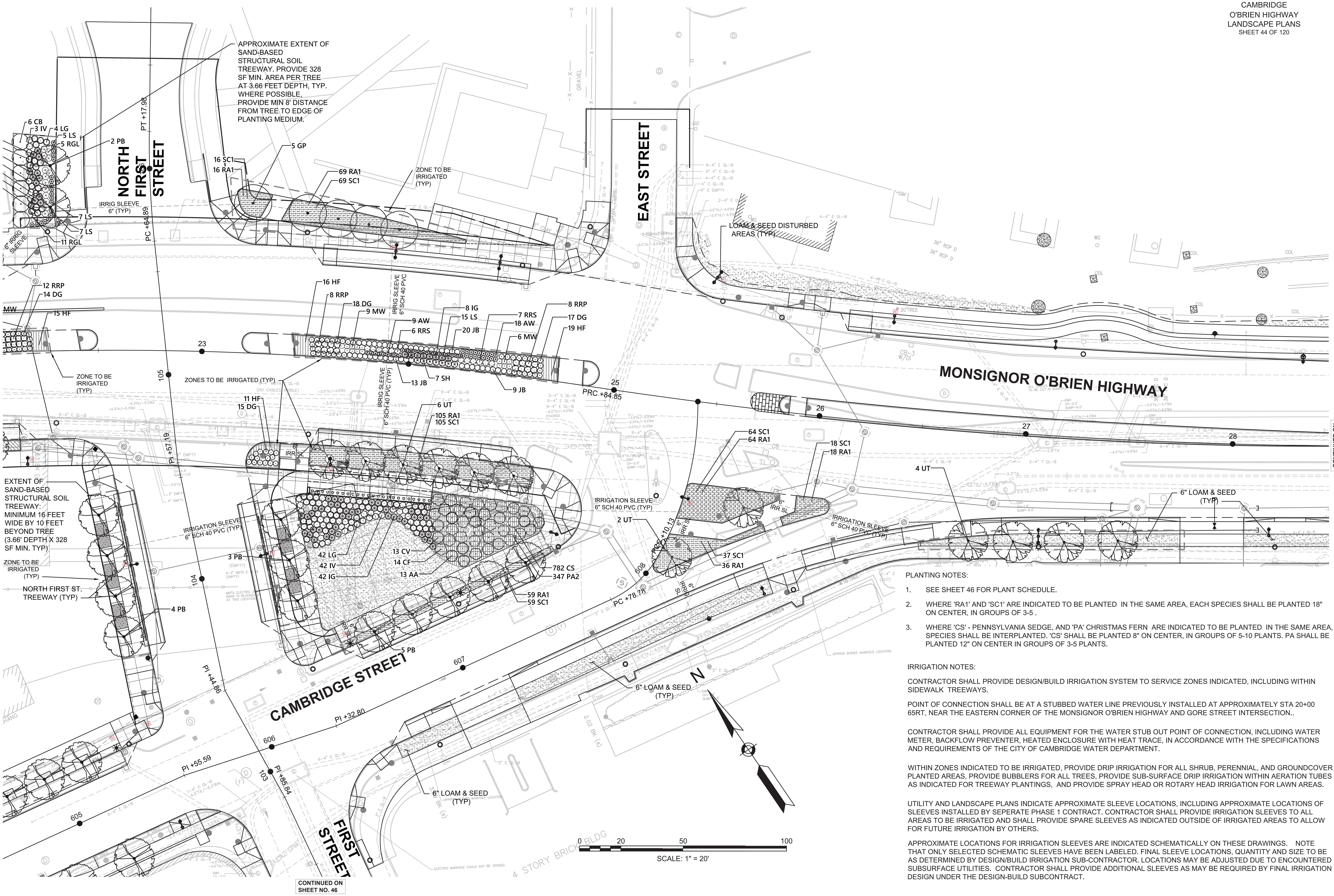
CAMBRIDGE
O'BRIEN HIGHWAY
LANDSCAPE PLANS
SHEET 44 OF 120


APPROXIMATE EXTENT OF SAND-BASED STRUCTURAL SOIL TREEWAY. PROVIDE 328 SF MIN. AREA PER TREE AT 3.66 FEET DEPTH, TYP. WHERE POSSIBLE, PROVIDE MIN 8' DISTANCE FROM TREE TO EDGE OF PLANTING MEDIUM.
NORTH FIRST STREET
EAST STREET
MONSIGNOR O'BRIEN HIGHWAY
CAMBRIDGE STREET
FIRST STREET
6 CB
3 IV
4 LG
5 LS
5 RGL
2 PB
7 LS
7 LS
11 RGL
IRRIG SLEEVE 6" (TYP)
6" IRRIG SLEEVE
PT +17.98
PC +64.89
16 SC1
16 RA1
5 GP
69 RA1
69 SC1
ZONE TO BE IRRIGATED (TYP)
LOAM & SEED DISTURBED AREAS (TYP)
12 RRP
14 DG
15 HF
16 HF
8 RRP
18 DG
9 MW
IRRIG SLEEVE 6" SCH 40 PVC
8 IG
15 LS
20 JB
9 AW
6 RRS
7 RRS
18 AW
6 MW
8 RRP
17 DG
19 HF
13 JB
7 SH
9 JB
IRRIG SLEEVE 6" SCH 40 PVC (TYP)
ZONE TO BE IRRIGATED (TYP)
ZONES TO BE IRRIGATED (TYP)
23
25
PRC +84.85
26
27
28
105
11 HF
15 DG
6 UT
105 RA1
105 SC1
64 SC1
64 RA1
18 SC1
18 RA1
4 UT
6" LOAM & SEED (TYP)
PI +57.19
EXTENT OF SAND-BASED STRUCTURAL SOIL TREEWAY: MINIMUM 16 FEET WIDE BY 10 FEET BEYOND TREE (3.66' DEPTH X 328 SF MIN. TYP)
ZONE TO BE IRRIGATED (TYP)
NORTH FIRST ST. TREEWAY (TYP)
IRRIGATION SLEEVE 6" SCH 40 PVC (TYP)
IRRIGATION SLEEVE 6" SCH 40 PVC (TYP)
IRRIGATION SLEEVE 6" SCH 40 PVC (TYP)
3 PB
4 PB
42 LG
42 IV
42 IG
13 CV
14 CF
13 AA
782 CS
347 PA2
59 RA1
59 SC1
5 PB
2 UT
37 SC1
36 RA1
PC +78.78
508
104
607
PI +44.86
PI +32.80
606
PI +55.59
605
103
PI +85.84
6" LOAM & SEED (TYP)
6" LOAM & SEED (TYP)
N
0
20
50
100
SCALE: 1" = 20'
4 STORY BRICK BLDG

CONTINUED ON SHEET NO. 43

CONTINUED ON SHEET NO. 45

CONTINUED ON SHEET NO. 46

CONTINUED ON SHEET NO. 46

PLANTING NOTES:

1. SEE SHEET 46 FOR PLANT SCHEDULE.
2. WHERE 'RA1' AND 'SC1' ARE INDICATED TO BE PLANTED IN THE SAME AREA, EACH SPECIES SHALL BE PLANTED 18" ON CENTER, IN GROUPS OF 3-5 .
3. WHERE 'CS' - PENNSYLVANIA SEDGE, AND 'PA' CHRISTMAS FERN ARE INDICATED TO BE PLANTED IN THE SAME AREA, SPECIES SHALL BE INTERPLANTED. 'CS' SHALL BE PLANTED 8" ON CENTER, IN GROUPS OF 5-10 PLANTS. PA SHALL BE PLANTED 12" ON CENTER IN GROUPS OF 3-5 PLANTS.

IRRIGATION NOTES:

CONTRACTOR SHALL PROVIDE DESIGN/BUILD IRRIGATION SYSTEM TO SERVICE ZONES INDICATED, INCLUDING WITHIN SIDEWALK TREEWAYS.

POINT OF CONNECTION SHALL BE AT A STUBBED WATER LINE PREVIOUSLY INSTALLED AT APPROXIMATELY STA 20+00 65RT, NEAR THE EASTERN CORNER OF THE MONSIGNOR O'BRIEN HIGHWAY AND GORE STREET INTERSECTION..

CONTRACTOR SHALL PROVIDE ALL EQUIPMENT FOR THE WATER STUB OUT POINT OF CONNECTION, INCLUDING WATER METER, BACKFLOW PREVENTER, HEATED ENCLOSURE WITH HEAT TRACE, IN ACCORDANCE WITH THE SPECIFICATIONS AND REQUIREMENTS OF THE CITY OF CAMBRIDGE WATER DEPARTMENT.

WITHIN ZONES INDICATED TO BE IRRIGATED, PROVIDE DRIP IRRIGATION FOR ALL SHRUB, PERENNIAL, AND GROUNDCOVER PLANTED AREAS, PROVIDE BUBBLERS FOR ALL TREES, PROVIDE SUB-SURFACE DRIP IRRIGATION WITHIN AERATION TUBES AS INDICATED FOR TREEWAY PLANTINGS, AND PROVIDE SPRAY HEAD OR ROTARY HEAD IRRIGATION FOR LAWN AREAS.

UTILITY AND LANDSCAPE PLANS INDICATE APPROXIMATE SLEEVE LOCATIONS, INCLUDING APPROXIMATE LOCATIONS OF SLEEVES INSTALLED BY SEPERATE PHASE 1 CONTRACT. CONTRACTOR SHALL PROVIDE IRRIGATION SLEEVES TO ALL AREAS TO BE IRRIGATED AND SHALL PROVIDE SPARE SLEEVES AS INDICATED OUTSIDE OF IRRIGATED AREAS TO ALLOW FOR FUTURE IRRIGATION BY OTHERS.

APPROXIMATE LOCATIONS FOR IRRIGATION SLEEVES ARE INDICATED SCHEMATICALLY ON THESE DRAWINGS. NOTE THAT ONLY SELECTED SCHEMATIC SLEEVES HAVE BEEN LABELED. FINAL SLEEVE LOCATIONS, QUANTITY AND SIZE TO BE AS DETERMINED BY DESIGN/BUILD IRRIGATION SUB-CONTRACTOR. LOCATIONS MAY BE ADJUSTED DUE TO ENCOUNTERED SUBSURFACE UTILITIES. CONTRACTOR SHALL PROVIDE ADDITIONAL SLEEVES AS MAY BE REQUIRED BY FINAL IRRIGATION DESIGN UNDER THE DESIGN-BUILD SUBCONTRACT.

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CAMBRIDGE
O'BRIEN HIGHWAY
LANDSCAPE PLANS
SHEET 45 OF 120

Plotted on 13-Jul-2021 12:04 PM

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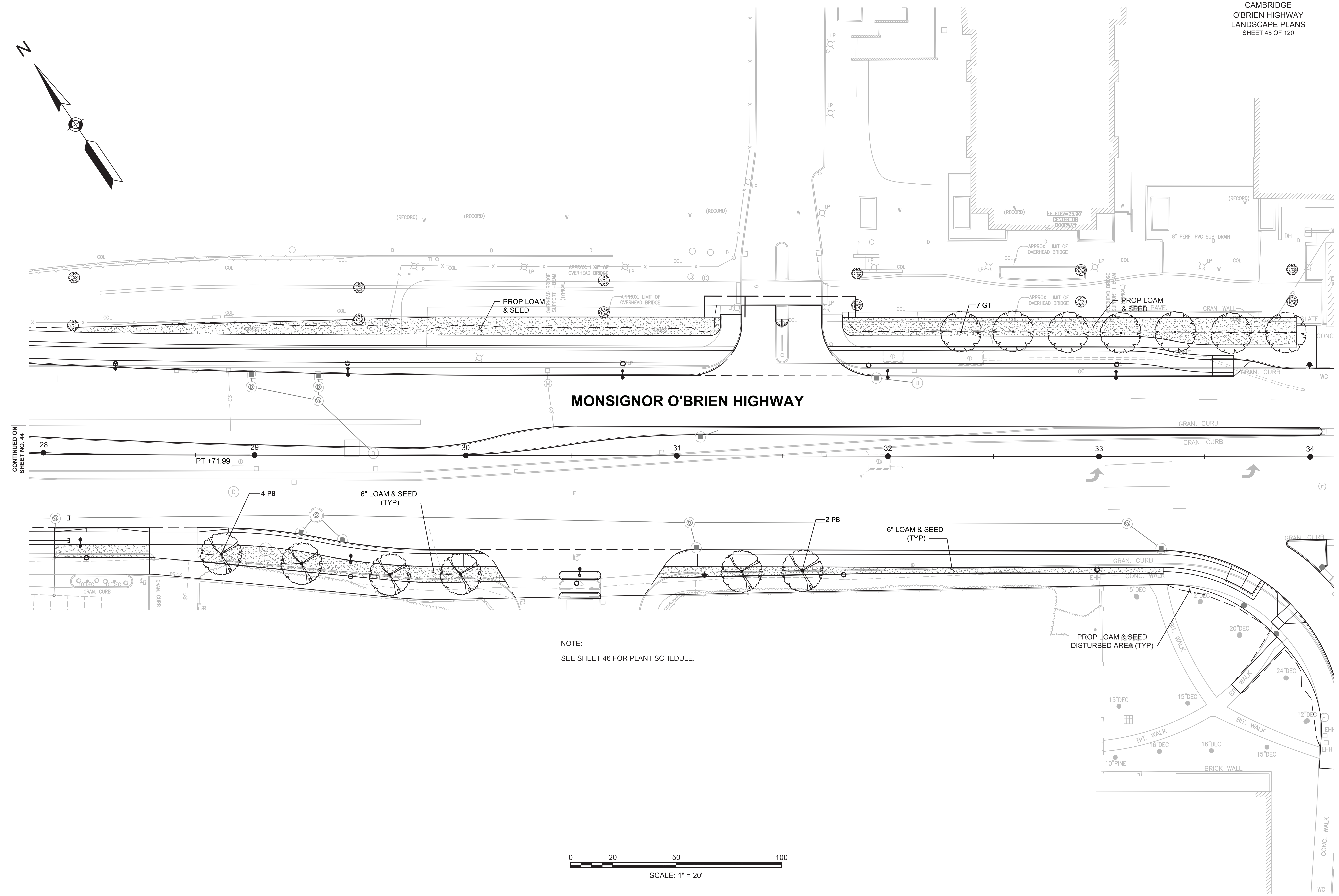


SCALE: 1" = 20'

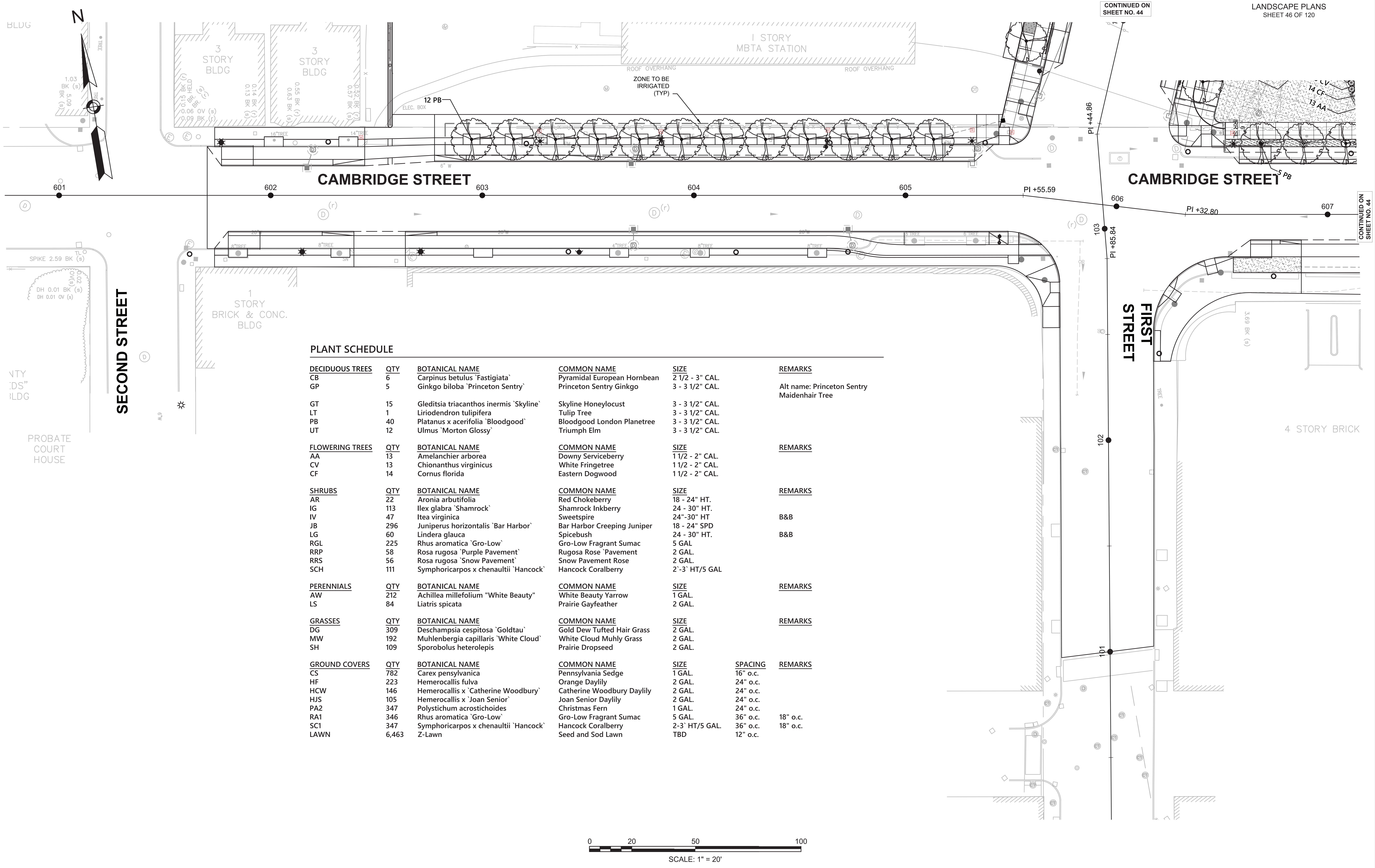
NOTE:

SEE SHEET 46 FOR PLANT SCHEDULE.

CAMBRIDGE
O'BRIEN HIGHWAY
LANDSCAPE PLANS
SHEET 46 OF 120

CONTINUED ON SHEET NO. 44

CONTINUED ON SHEET NO. 44



PLANT SCHEDULE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
CB	6	Carpinus betulus `Fastigiata`	Pyramidal European Hornbean	2 1/2 - 3" CAL.	
GP	5	Ginkgo biloba `Princeton Sentry`	Princeton Sentry Ginkgo	3 - 3 1/2" CAL.	Alt name: Princeton Sentry Maidenhair Tree
GT	15	Gleditsia triacanthos inermis `Skyline`	Skyline Honeylocust	3 - 3 1/2" CAL.	
LT	1	Liriodendron tulipifera	Tulip Tree	3 - 3 1/2" CAL.	
PB	40	Platanus x acerifolia `Bloodgood`	Bloodgood London Planetree	3 - 3 1/2" CAL.	
UT	12	Ulmus `Morton Glossy`	Triumph Elm	3 - 3 1/2" CAL.	

FLOWERING TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AA	13	Amelanchier arborea	Downy Serviceberry	1 1/2 - 2" CAL.	
CV	13	Chionanthus virginicus	White Fringetree	1 1/2 - 2" CAL.	
CF	14	Cornus florida	Eastern Dogwood	1 1/2 - 2" CAL.	

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AR	22	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	
IG	113	Ilex glabra `Shamrock`	Shamrock Inkberry	24 - 30" HT.	
IV	47	Itea virginica	Sweetspire	24"-30" HT	B&B
JB	296	Juniperus horizontalis `Bar Harbor`	Bar Harbor Creeping Juniper	18 - 24" SPD	
LG	60	Lindera glauca	Spicebush	24 - 30" HT.	B&B
RGL	225	Rhus aromatica `Gro-Low`	Gro-Low Fragrant Sumac	5 GAL	
RRP	58	Rosa rugosa `Purple Pavement`	Rugosa Rose `Pavement	2 GAL.	
RRS	56	Rosa rugosa `Snow Pavement`	Snow Pavement Rose	2 GAL.	
SCH	111	Symphoricarpos x chenaultii `Hancock`	Hancock Coralberry	2`-3` HT/5 GAL	

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AW	212	Achillea millefolium "White Beauty"	White Beauty Yarrow	1 GAL.	
LS	84	Liatris spicata	Prairie Gayfeather	2 GAL.	

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
DG	309	Deschampsia cespitosa `Goldtau`	Gold Dew Tufted Hair Grass	2 GAL.	
MW	192	Muhlenbergia capillaris `White Cloud`	White Cloud Muhly Grass	2 GAL.	
SH	109	Sporobolus heterolepis	Prairie Dropseed	2 GAL.	

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	782	Carex pensylvanica	Pennsylvania Sedge	1 GAL.	16" o.c.	
HF	223	Hemerocallis fulva	Orange Daylily	2 GAL.	24" o.c.	
HCW	146	Hemerocallis x `Catherine Woodbury`	Catherine Woodbury Daylily	2 GAL.	24" o.c.	
HJS	105	Hemerocallis x `Joan Senior`	Joan Senior Daylily	2 GAL.	24" o.c.	
PA2	347	Polystichum acrostichoides	Christmas Fern	1 GAL.	24" o.c.	
RA1	346	Rhus aromatica `Gro-Low`	Gro-Low Fragrant Sumac	5 GAL.	36" o.c.	18" o.c.
SC1	347	Symphoricarpos x chenaultii `Hancock`	Hancock Coralberry	2-3` HT/5 GAL.	36" o.c.	18" o.c.
LAWN	6,463	Z-Lawn	Seed and Sod Lawn	TBD	12" o.c.	

11554-LA - 11 FIRST ST - V2.DWG Plotted on 19-Nov-2021 3:01 PM

CAMBRIDGE
O'BRIEN HIGHWAY
SIGNAGE & STRIPING PLANS

11554-TSIG.DWG Plotted on 13-Jul-2021 12:05 PM

CONSTRUCTION NOTES

1. SEE SHEET 58 FOR TRAFFIC SIGNAL PLANS.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
4. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
5. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&D UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
SIGNAGE & STRIPING PLANS
SHEET 48 OF 120

11554-TSIG.DWG Plotted on 13-Jul-2021 12:06 PM

CONSTRUCTION NOTES

1. SEE SHEET 60 FOR TRAFFIC SIGNAL PLANS.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
4. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4' "CLEAR" SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&D UNLESS OTHERWISE NOTED.

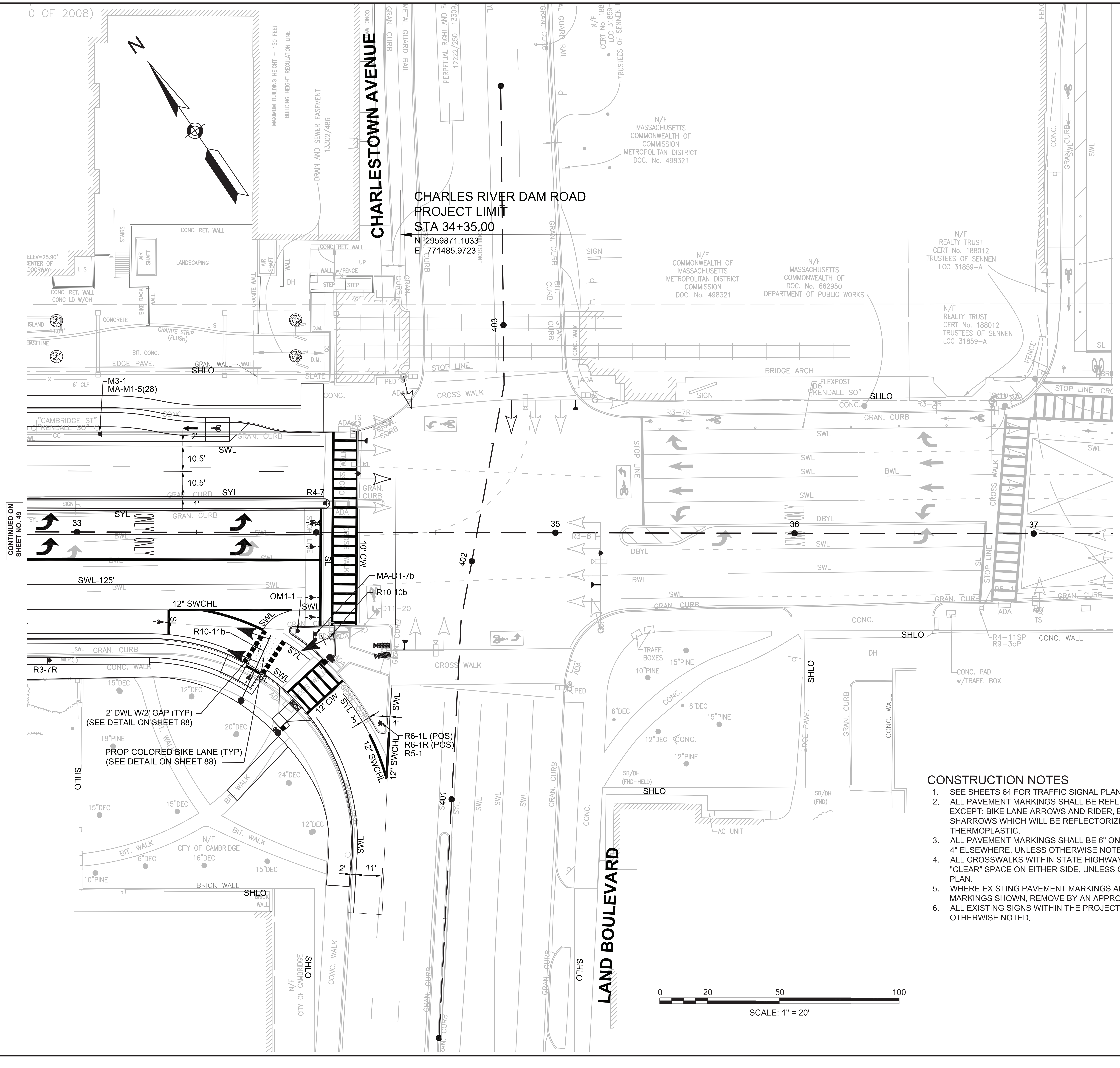
CAMBRIDGE
O'BRIEN HIGHWAY
SIGNAGE & STRIPING PLANS
SHEET 49 OF 120

CONSTRUCTION NOTES

1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
2. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
3. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4' "CLEAR" SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.
4. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
5. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
SIGNAGE & STRIPING PLANS
SHEET 50 OF 120

Plotted on 13-Jul-2021 12:06 PM
11554-TSIG.DWG



CONSTRUCTION NOTES

1. SEE SHEETS 64 FOR TRAFFIC SIGNAL PLANS.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
4. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4' "CLEAR" SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&D UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
SIGNAGE & STRIPING PLANS
SHEET 51 OF 120

NORTH FIRST STREET
MONSIGNOR O'BRIEN HIGHWAY
CAMBRIDGE STREET
FIRST STREET
N
BEGIN PROP CITY LAYOUT ALTERATION
PROP SHLO ALTERATION
END PROP SHLO ALTERATION
PROP CITY LAYOUT ALTERATION
PRIVATE LAYOUT
CITY LAYOUT
R&S EXIST SINGLE HEAD METER & POST
R&S EXIST DOUBLE HEAD METER & POST
PROP TWO-STATE TURN BOX (TYP) (SEE DETAIL ON SHEET 88)
2' DWL W/2' GAP (SEE DETAIL ON SHEET 88)
LECHMERE BUS TERMINAL ONE STORY BRICK BUILDING
ARCHSTONE NORTH POINT II LLC 56599/194 (PLAN No. 90 OF 2008)
N/F TWO CANAL PARK, LLC 47840/24
4 STORY BRICK BLDG
10' ELECTRIC AND TELEPHONE EASEMENT 19666/146
5' FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
1.67' FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
SERVICE ACCESS & UTILITY EASEMENT BOOK 16059, PAGE 439
NOTE: PROPERTY LINES ARE VERY APPROXIMATE
15' CW
10' CW
SWL
SYL
SHLO
DBYL
ONLY
R=45'
R=55'
R=100'
PI +55.50
PC +49.5
PC +78.78
12" SWCHL
30' (TYP)
BWL
MA-D3-6/10a
R10-11b
R7-1
R3-7L
D11-20
MA-D3-8
M3-1
MA-M1-5(28)
M6-1(L)
R14-2
R10-10b
M4-5
M3-3
M6-3
R&R SQUARE SIGN
RET
R14-4
M6-1R
R14-2(MOD)
MA-R10-12a
MA-D3-6/10b
R4-7
R3-3
R3-7R
Medford 28 TO 93 Everett NORTH

CONTINUED ON SHEET NO. 52

CONTINUED ON SHEET NO. 52

CONTINUED ON SHEET NO. 49

0 20 50 100
SCALE: 1" = 20'

CONSTRUCTION NOTES

1. SEE SHEET 66 FOR TRAFFIC SIGNAL PLAN.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
4. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4' "CLEAR" SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&D UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
SIGNAGE & STRIPING PLANS
SHEET 52 OF 120

SCALE: 1" = 20'

CONSTRUCTION NOTES

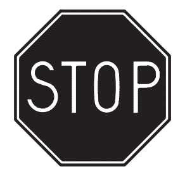
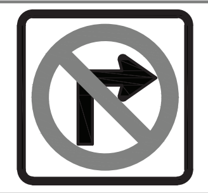
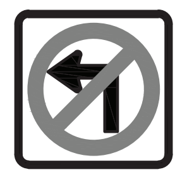
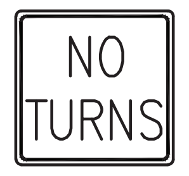
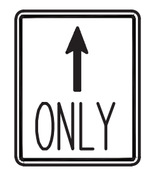
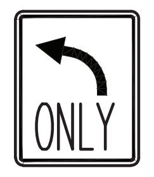
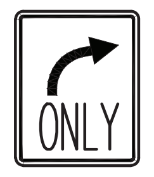
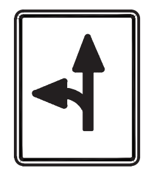
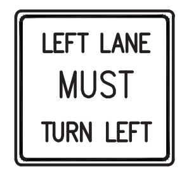
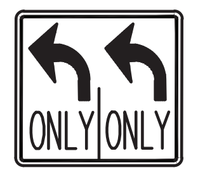
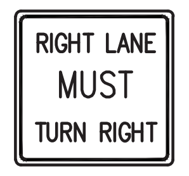
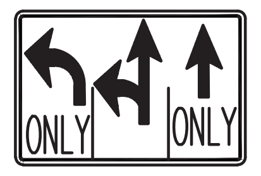
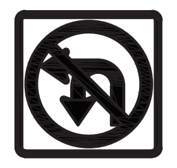
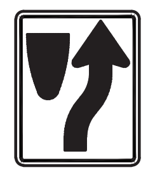
1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
2. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
3. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
4. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&D UNLESS OTHERWISE NOTED.

11554-TSIG - 11 FIRST ST - V2.DWG Plotted on 19-Nov-2021 3:07 PM

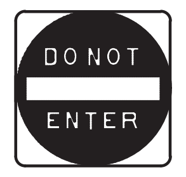
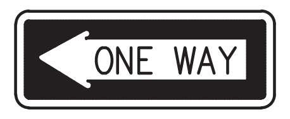
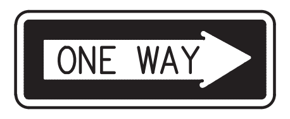
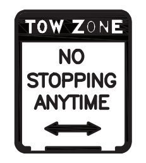
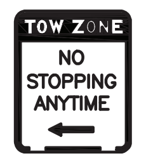
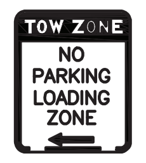
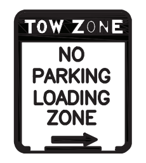
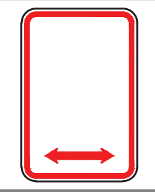
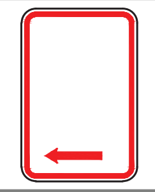
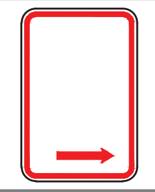
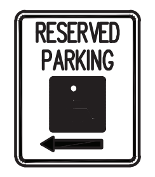
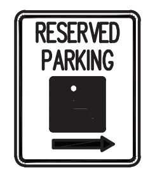
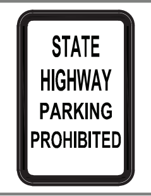
CAMBRIDGE
O'BRIEN HIGHWAY
SIGN SUMMARY
SHEET 53 OF 120

Plotted on 12-Jul-2021 10:00 PM
11554-SS.DWG

TRAFFIC SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
R1-1	30"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			1	RED	WHITE	WHITE	P5-1	5.18	5.18
R3-1a	36"	36"					1	WHITE	RED/ BLACK	BLACK	1 MTD ON TS MAST ARM	9.00	9.00
R3-2	24"	24"					6	WHITE	RED/ BLACK	BLACK	P5-6	4.00	24.00
R3-3	24"	24"					1	WHITE	BLACK	BLACK	P5-1	4.00	4.00
R3-5a	30"	36"					2	WHITE	BLACK	BLACK	P5-1 1 MTD ON TS MAST ARM	7.50	15.00
R3-5L	30"	36"					1	WHITE	BLACK	BLACK	1 MTD ON TS POST	7.50	7.50
R3-5R	30"	36"					1	WHITE	BLACK	BLACK	P5-1	7.50	7.50
R3-6L+T	30"	36"					1	WHITE	BLACK	BLACK	1 MTD ON TS MAST ARM	7.50	7.50
R3-7L	30"	30"	 LEFT LANE MUST TURN LEFT				5	WHITE	BLACK	BLACK	P5-5	6.25	31.25
R3-7DL	30"	30"					1	WHITE	BLACK	BLACK	P5-2	6.25	6.25
R3-7R	30"	30"	 RIGHT LANE MUST TURN RIGHT				6	WHITE	BLACK	BLACK	P5-6	6.25	37.50
R3-8c	48"	30"					1	WHITE	BLACK	BLACK	P5-2	10.00	10.00
R3-18	24"	24"					2	WHITE	RED/ BLACK	BLACK	2 MTD W/OTHERS	4.00	8.00
	36"	36"					3				3 MTD ON TS MAST ARM	9.00	27.00
R4-7	24"	30"					7	WHITE	BLACK	BLACK	P5-6 1 MTD ON TS POST	5.00	35.00

TRAFFIC SIGN SUMMARY (CONTINUED)

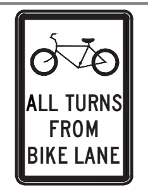
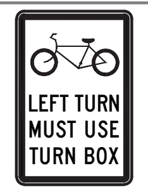
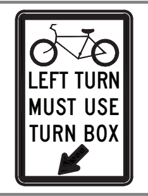
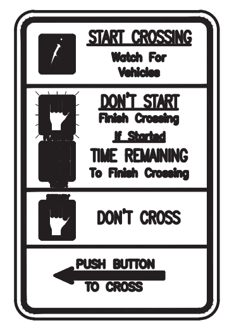
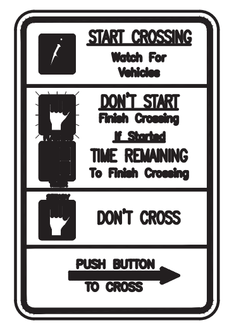
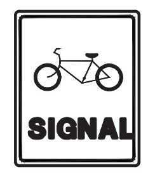
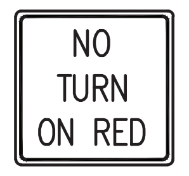
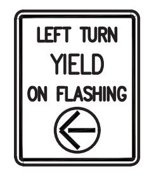
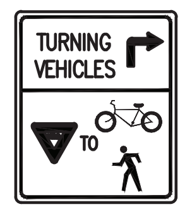
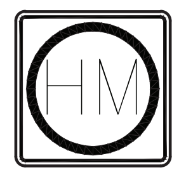
IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
R5-1	30"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			3	WHITE	RED/ WHITE	--	P5-3	6.25	18.75
R6-1L(POS)	36"	12"	 (PAINTED ONE SIDE)				3	BLACK	WHITE	WHITE	3 MTD W/OTHERS	3.00	9.00
R6-1R(POS)	36"	12"	 (PAINTED ONE SIDE)				9	BLACK	WHITE	WHITE	9 MTD W/OTHERS	3.00	18.00
R7-1	12"	18"	 TOW ZONE NO STOPPING ANYTIME	AS PER CITY OF CAMBRIDGE STANDARD			6	RED/ WHITE	WHITE/ RED	RED	P5-5 1 MTD W/OTHERS	1.50	3.00
R7-1L	12"	18"	 TOW ZONE NO STOPPING ANYTIME				1	RED/ WHITE	WHITE/ RED	RED	P5-1	1.50	1.50
R7-6aL	12"	18"	 TOW ZONE NO PARKING LOADING ZONE				1	RED/ WHITE	WHITE/ RED	RED	P5-1	1.50	1.50
R7-6aR	12"	18"	 TOW ZONE NO PARKING LOADING ZONE				1	RED/ WHITE	WHITE/ RED	RED	P5-1	1.50	1.50
R7-6D	12"	18"	 SEE NOTE 3	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			1	WHITE	RED	RED	P5-1	1.50	1.50
R7-6L	12"	18"	 SEE NOTE 3				1	WHITE	RED	RED	P5-1	1.50	1.50
R7-6R	12"	18"	 SEE NOTE 3				1	WHITE	RED	RED	P5-1	1.50	1.50
R7-8L	12"	18"					1	WHITE/ BLUE	GREEN/ WHITE	GREEN	P5-1	1.50	1.50
R7-8R	12"	18"					1	WHITE/ BLUE	GREEN/ WHITE	GREEN	1 MTD W/OTHERS	1.50	1.50
MA-R8-1a	24"	30"		AS PER MASSDOT STANDARD			2	WHITE	RED	RED	P5-2	5.00	10.00

NOTES:
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1990 DRAWINGS FOR SIGNS AND SUPPORTS; AND THE MASSDOT STANDARD SIGNS, AS AMENDED.
2. SIGN SHALL BE FABRICATED WITH TYPE B EXTRUDED ALUMINUM PANELS PER MASSDOT STANDARDS.
3. LEGEND TO BE PROVIDED BY MASSDOT BASED ON EXACT NATURE OF REGULATION. CONTRACTOR TO COORDINATE WITH MASSDOT IN REGARDS TO THESE SIGNS.

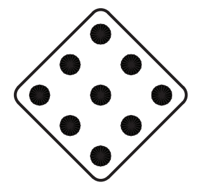
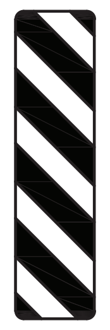
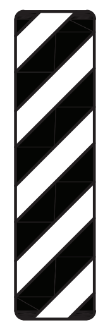
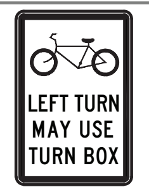
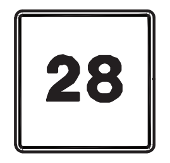
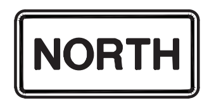
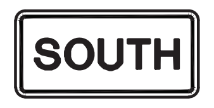
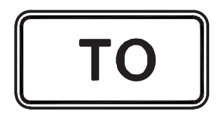
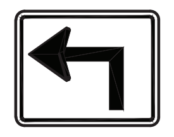
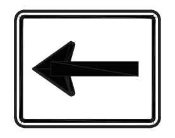
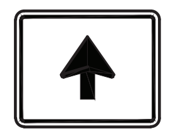
CAMBRIDGE
O'BRIEN HIGHWAY
SIGN SUMMARY
SHEET 54 OF 120

Plotted on 12-Jul-2021 10:01 PM
11554-SS.DWG

TRAFFIC SIGN SUMMARY (CONTINUED)

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
R9-23	12"	18"		AS PER FHWA "INTERIM APPROVAL IA-20", AS AMENDED			2	WHITE	BLACK	BLACK	P5-1 1 MTD W/OTHERS	1.50	3.00
R9-23a	12"	18"					1	WHITE	BLACK	BLACK	P5-1	1.50	1.50
R9-23b	12"	18"					1	WHITE	BLACK	BLACK	1 MTD W/OTHERS	1.50	1.50
R10-3e(L)	9"	15"	 START CROSSING Watch For Vehicles DON'T START Finish Crossing If Started TIME REMAINING To Finish Crossing DON'T CROSS PUSH BUTTON TO CROSS	AS PER MASSDOT STANDARD			21	WHITE	WHITE/ BLACK/ ORANGE	BLACK	21 MTD ON TS POST/ TS POLE	INCLUDED UNDER ITEMS 815.3 & 816.04, 816.05, 816.06, 816.07	
R10-3e(R)	9"	15"	 START CROSSING Watch For Vehicles DON'T START Finish Crossing If Started TIME REMAINING To Finish Crossing DON'T CROSS PUSH BUTTON TO CROSS				15	WHITE	WHITE/ BLACK/ ORANGE	BLACK	15 MTD ON TS POST/ TS POLE	INCLUDED UNDER ITEMS 815.3 & 816.04, 816.05, 816.06, 816.07	
R10-10b	12"	18"		AS PER FHWA "INTERIM APPROVAL IA-16", AS AMENDED			5	WHITE	BLACK	BLACK	5 MTD ON TS POST/ TS POLE	1.50	6.00
	18"	24"					1				1 MTD ON TS MAST ARM	3.00	3.00
R10-11b	24"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			1	WHITE	BLACK	BLACK	1 MTD ON TS POST/ TS POLE	4.00	8.00
	36"	36"					9				9 MTD ON TS MAST ARM	9.00	72.00
MA-R10-12a	30"	36"		AS PER MASSDOT STANDARD			3	WHITE	BLACK/ YELLOW	BLACK	3 MTD ON TS MAST ARM	7.50	22.50
R10-15(MOD)	30"	36"		3D 3D 3D	2.875" 2.25" 2.125" 4.125" 2" 3.25"	5.625"x6.5" 5"x8.5" 8"x4.7"	2	FLOURESCENT YELLOW/ GREEN WHITE	BLACK RED/BLACK	BLACK	P5-1 1 MTD ON TS POST	7.50	15.00
R14-2	24"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			3	WHITE	GREEN/ BLACK	BLACK	P5-3	4.00	12.00

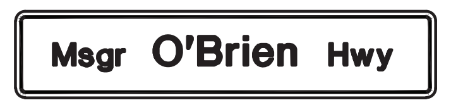
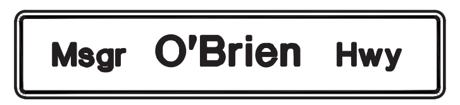
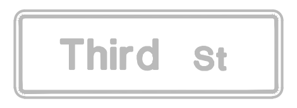
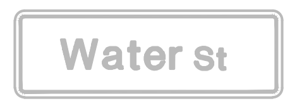
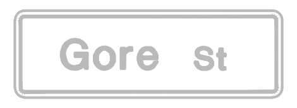
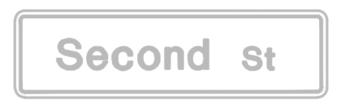
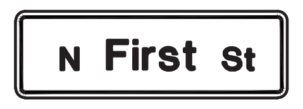
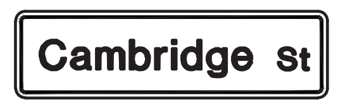
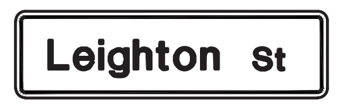
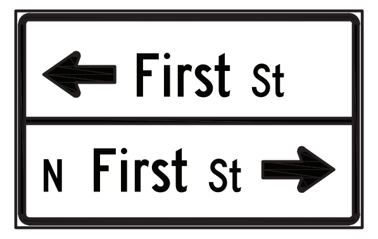
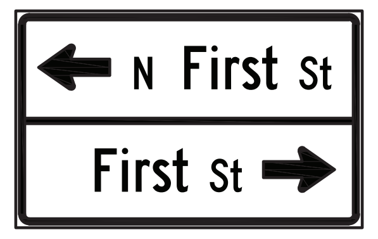
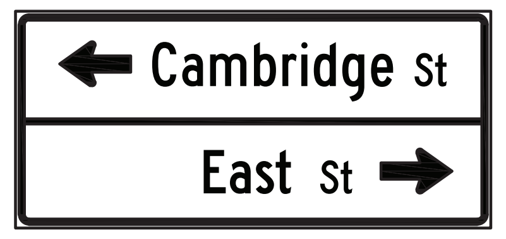
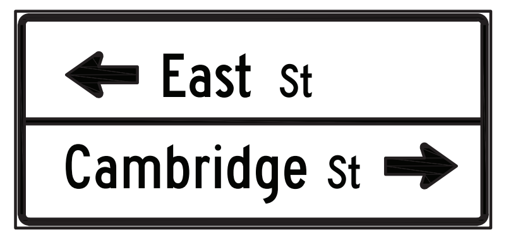
TRAFFIC SIGN SUMMARY (CONTINUED)

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
OM1-1	24"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			1	YELLOW	YELLOW CLUSTER	- - -	P5-1	4.00	8.00
OM3-L	12"	36"					1	YELLOW	BLACK	- - -	P5-1	3.00	3.00
OM3-R	12"	36"					1	YELLOW	BLACK	- - -	P5-1	3.00	3.00
D11-20	12"	18"		AS PER FHWA "INTERIM APPROVAL IA-20", AS AMENDED			7	GREEN	WHITE	WHITE	P5-5 2 MTD W/OTHERS	1.50	10.50
MA-M1-5(28)	24"	24"		AS PER MASSDOT STANDARD			6	WHITE	BLACK	BLACK	P5-6	4.00	24.00
M3-1	24"	12"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION", AS AMENDED			4	WHITE	BLACK	BLACK	4 MTD W/OTHERS	2.00	8.00
M3-3	24"	12"					2	WHITE	BLACK	BLACK	2 MTD W/OTHERS	2.00	4.00
M4-5	24"	12"					2	WHITE	BLACK	BLACK	2 MTD W/OTHERS	2.00	4.00
M5-1(L)	21"	15"					1	WHITE	BLACK	BLACK	1 MTD W/OTHERS	2.19	2.19
M6-1(L)	21"	15"					3	WHITE	BLACK	BLACK	3 MTD W/OTHERS	2.19	6.57
M6-3	21"	15"					1	WHITE	BLACK	BLACK	1 MTD W/OTHERS	2.19	2.19

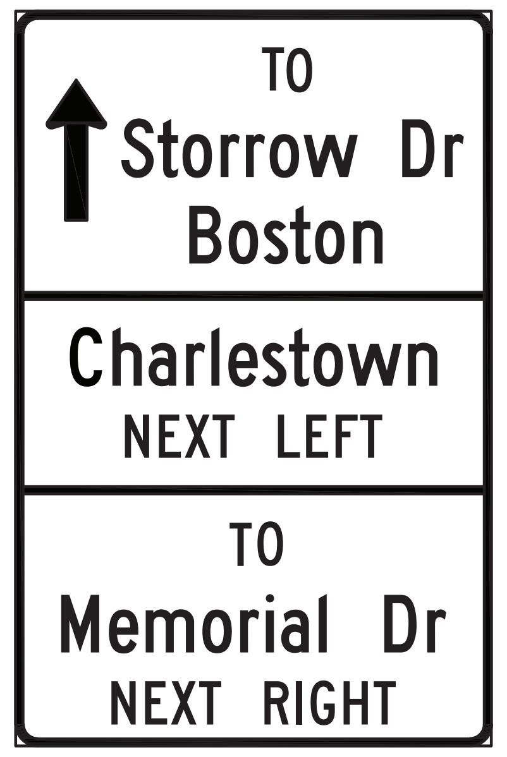
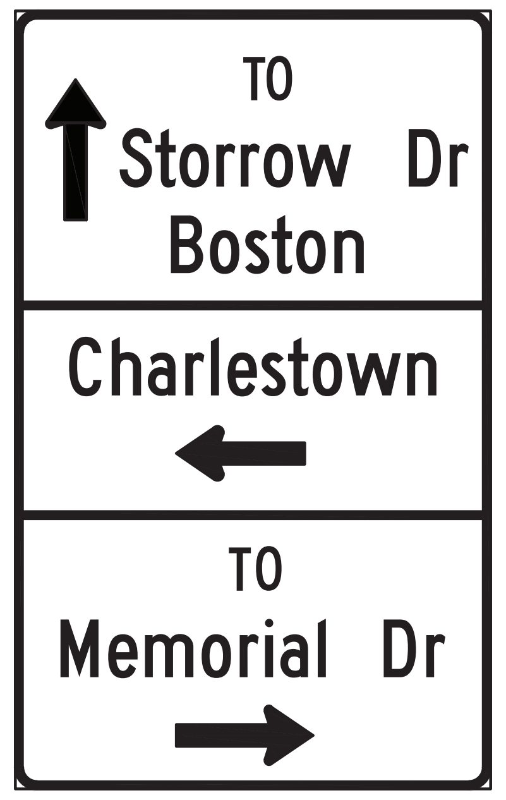
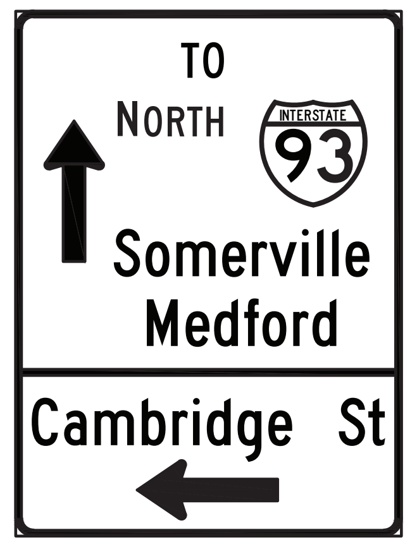
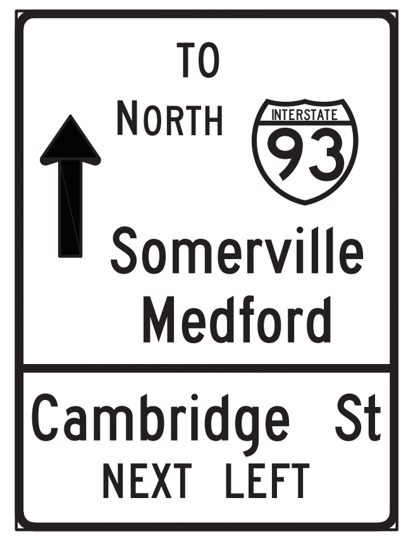
NOTES:

1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1990 DRAWINGS FOR SIGNS AND SUPPORTS; AND THE MASSDOT STANDARD SIGNS, AS AMENDED.

TRAFFIC SIGN SUMMARY (CONTINUED)

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
MA-D3-1 (POS)	78"	18"	 (PAINTED ONE SIDE)	6"/9"/6"C	4.5" 4.5"	N/A	3	GREEN	WHITE	WHITE	3 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	
MA-D3-1a (POS)	60"	12"	 (PAINTED ONE SIDE)	4"/6"/4"C	4" 4"	N/A	2	GREEN	WHITE	WHITE	P5-4	INCLUDED UNDER ITEM 874	
MA-D3-2 (POS)	42"	18"	 (PAINTED ONE SIDE)	9"/6"C	4.5" 4.5"	N/A	2	GREEN	WHITE	WHITE	2 MTD ON TS MAST ARM	INSTALLED DURING PHASE 1 CONSTRUCTION	
MA-D3-3 (POS)	48"	18"	 (PAINTED ONE SIDE)	9"/6"C	4.5" 4.5"	N/A	2	GREEN	WHITE	WHITE	2 MTD ON TS MAST ARM	INSTALLED DURING PHASE 1 CONSTRUCTION	
MA-D3-4 (PBS)	30"	12"	 (PAINTED BOTH SIDE)	6"/4"D	3" 3"	N/A	2	GREEN	WHITE	WHITE	2 MTD W/OTHERS	INSTALLED DURING PHASE 1 CONSTRUCTION	
MA-D3-5 (PBS)	36"	12"	 (PAINTED BOTH SIDE)	6"/4"D	3" 3"	N/A	1	GREEN	WHITE	WHITE	1 MTD W/OTHERS	INSTALLED DURING PHASE 1 CONSTRUCTION	
MA-D3-6 (POS)	36"	18"	 (PAINTED ONE SIDE)	6"/9"/6"C	4.5" 4.5"	N/A	2	GREEN	WHITE	WHITE	2 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	
MA-D3-8 (POS)	66"	18"		9"/6"C	4.5" 4.5"	N/A	2	GREEN	WHITE	WHITE	2 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	
MA-D3-9 (PBS)	42"	12"	 (PAINTED BOTH SIDE)	6"/4"D	3" 3"	N/A	1	GREEN	WHITE	WHITE	1 MTD W/OTHERS	INCLUDED UNDER ITEM 874	
MA-D3-6/10a (POS)	48"	30"	 (PAINTED ONE SIDE)	6"/4.5"C 4.5"/6"/4.5"C	5" 4" 4" 5"	6" ARROW 6" ARROW	1	GREEN	WHITE	WHITE	1 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	
MA-D3-6/10b (POS)	48"	30"	 (PAINTED ONE SIDE)	4.5"/6"/4.5"C 6"/4.5"C	5" 4" 4" 5"	6" ARROW 6" ARROW	1	GREEN	WHITE	WHITE	1 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	
MA-D3-7/8a (POS)	66"	30"	 (PAINTED ONE SIDE)	6"/4.5"C 6"/4.5"C	4.5" 4" 4" 4.5"	6" ARROW 6" ARROW	1	GREEN	WHITE	WHITE	1 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	
MA-D3-7/8b (POS)	66"	30"	 (PAINTED ONE SIDE)	6"/4.5"C 6"/4.5"C	4.5" 4" 4" 4.5"	6" ARROW 6" ARROW	1	GREEN	WHITE	WHITE	1 MTD ON TS MAST ARM	INCLUDED UNDER ITEM 874	

TRAFFIC SIGN SUMMARY (CONTINUED)

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
MA-D1-7a SEE NOTE 2	66"	108"	 TO Storrow Dr Boston Charlestown NEXT LEFT TO Memorial Dr NEXT RIGHT	6C 8C 8C 8C 6C 6C 8C 6C	4" 4" 4" 4" 4" 4" 4" 4" 4" 4" 4"	8"x18" @ 0°	1	GREEN	WHITE	WHITE	2 - W6x15 STEEL POSTS	49.50	49.50
MA-D1-7b SEE NOTE 2	66"	114"	 TO Storrow Dr Boston Charlestown TO Memorial Dr	6C 8C 8C 8C 6C 8C	5" 4" 4" 4" 4" 4" 4" 4" 4" 4" 5"	8"x18" @ 0° 8"x18" @ 270° 8"x18" @ 90°	1	GREEN	WHITE	WHITE	2 - W6x15 STEEL POSTS	52.25	52.25
MA-D1-7c SEE NOTE 2	66"	96"	 TO NORTH INTERSTATE 93 Somerville Medford Cambridge St	6C 7C/6C/18 8C 8C 8C	4" 4" 4" 4" 4" 4" 4" 4"	8"x18" @ 0° 8"x18" @ 270°	1	GREEN	WHITE	WHITE	2 - W6x12 STEEL POSTS	44.00	44.00
MA-D1-7d SEE NOTE 2	66"	96"	 TO NORTH INTERSTATE 93 Somerville Medford Cambridge St NEXT LEFT	6C 7C/6C/18 8C 8C 8C 6C	5" 4" 4" 4" 4" 4" 4" 5"	8"x18" @ 0°	1	GREEN	WHITE	WHITE	2 - W6x12 STEEL POSTS	44.00	44.00

NOTES:

1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1990 DRAWINGS FOR SIGNS AND SUPPORTS; AND THE MASSDOT STANDARD SIGNS, AS AMENDED.
2. SIGN SHALL BE FABRICATED WITH TYPE B EXTRUDED ALUMINUM PANELS PER MASSDOT STANDARDS.

Plotted on 13-Jul-2021 12:08 PM

11554-TSIG.DWG

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 56 OF 120

LOCATION 1

MODIFY EXIST TS CABINET
TO ACCEPT PROS TSP EQUIPMENT
MODIFY EXIST TS CONTROLLER
TO PROPOSED TIMINGS SHOWN

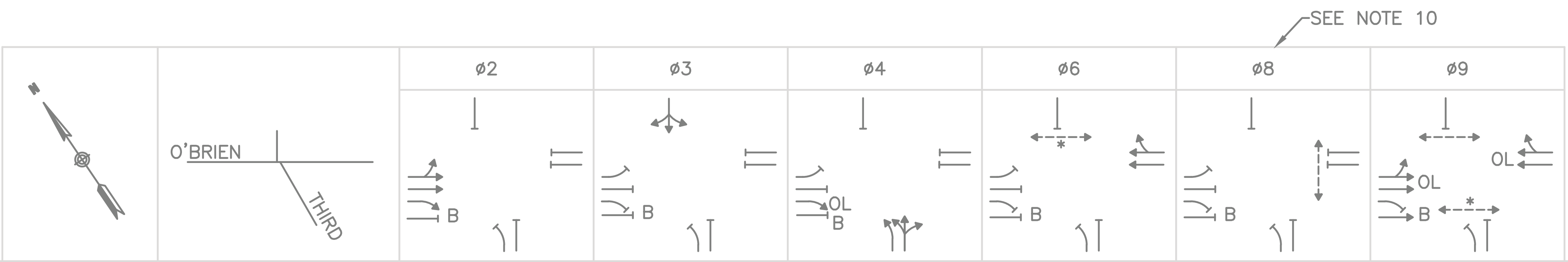
CONSTRUCTION NOTES

1. SEE SHEET 57 FOR TRAFFIC SIGNAL DATA.
2. RETAIN ALL EXISTING TS EQUIPMENT AND ALL TS CONDUIT UNLESS OTHERWISE NOTED.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS - TRAFFIC PLAN
SHEET 57 OF 120

LOCATION 1

Plotted on 13-Jul-2021 12:08 PM
11554-TSIG.DWG



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	FLASH
O'BRIEN HWY	NB	A,B,C	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	G	Y	R	FY
O'BRIEN HWY	SB	D,E	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FY
O'BRIEN HWY	SB	F	—G→	—Y→	—R→	—R→	—R→	—R→	—G→	—Y→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—FY→
THIRD ST	EB	G	←R—	←R—	←R—	←R—	←R—	←R—	←G—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
THIRD ST	EB	H	R	R	R	R	R	R	←G— G	Y	R	R	R	R	R	R	R	R	R	R	FR
THIRD ST	EB	J	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
DRIVEWAY	WB	K,L	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
O'BRIEN HWY BIKE	SB	M	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FR
PEDESTRIAN X-ING	EB-WB	P1-P2	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P3-P4	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P5-P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
TIMING IN SECONDS																					
MINIMUM GREEN (INITIAL)			10			5			6			10						10			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			2			2			2						2			
MAXIMUM 1			35			10			25			35						13			
MAXIMUM 2			40			10			30			40						13			
YELLOW CLEARANCE				4			3			3			4			3			4		
RED CLEARANCE					1			2.5			3			1			1			1	
BIKE TIMINGS																			3.5	6.5	
PEDESTRIAN WALK												7			7			7			
PEDESTRIAN CLEARANCE												8			23			11			
DETECTOR MEMORY			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			–			–			
RECALL			MIN			OFF			OFF			MIN			PED			OFF			

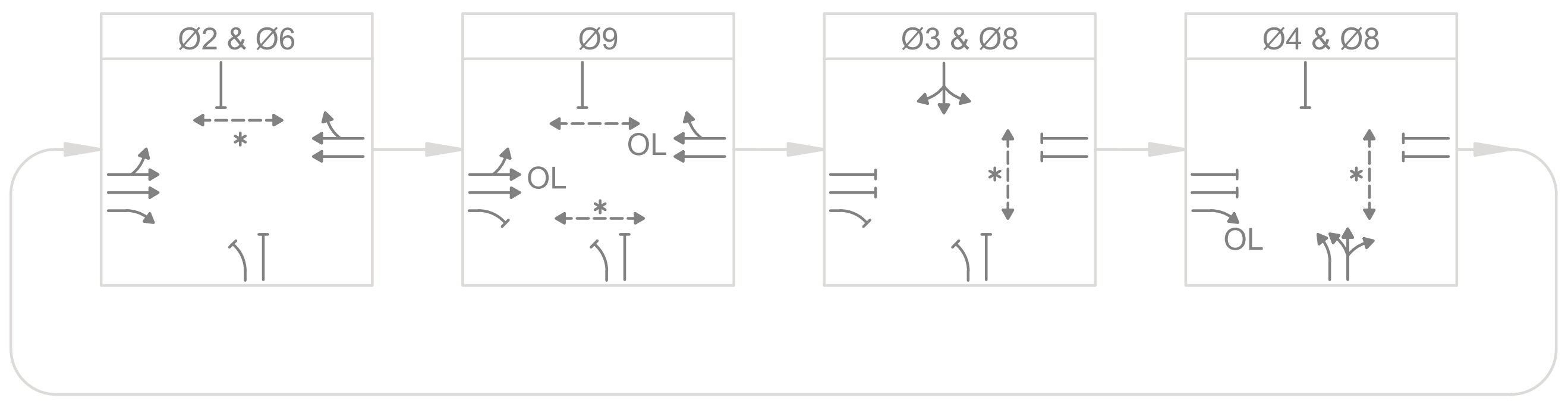
COORDINATION DATA			COORDINATION PHASE SPLIT TIMES					
TIMING PLAN	CYCLE	OFFSET	ø2	ø3	ø4	ø6	ø8	ø9
1/1/1 M-F 5:30AM-10AM	110	92	45	11	30	45	41	24
2/1/1 M-F 3PM-8PM	100	90	31	11	34	31	42	24
3/1/1: M-F 10AM-3PM, M-F 8PM-11PM, SAT/SUN 10AM-6PM	90	81	30	11	25	30	36	24
4/1/1 ALL OTHER TIMES	80***	73	32	11	20	32	31	17
MODE			COORD ø			COORD ø		

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION.
3. ** PEDESTRIAN RECALL SHALL BE SET FOR COORDINATION PATTERNS 1/1/1, 2/1/1, & 3/1/1.
4. *** CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN MOVEMENT.
5. OL = OVERLAP
6. MAXIMUM 1 = ALL OTHER TIMES
7. MAXIMUM 2 = DURING COORDINATION
8. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
9. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
10. ø4 (PED) SHALL OPERATE IN RING 2. WHEN SERVICED PHASE 8 SHALL TIME CONCURRENTLY WITH ø7 & ø8. WHEN ø4 IS NOT CALLED, RING 2 (BARRIER RIGHT) SHALL REST IN AN UNUSED PHASE WHEN EITHER ø7 OR ø8 IS BEING SERVED.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

EXISTING PREFERENTIAL PHASE SEQUENCE



OL - OVERLAP; * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

EMERGENCY VEHICLE PRE-EMPTION OPERATION
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2 OR D3 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D3 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1	⇉	Ø2
D2	2	⇇	Ø6
D3	3	⇈	Ø4

EXIST LOOP DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
△1	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
△2	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
△3	1-4'X6'	4	PRESENCE	0	Ø6	BIKE/ SINGLE
△4	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
△5	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
△6	1-4'X6'	4	PRESENCE	0	Ø2	BIKE/ SINGLE
△7	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
△8	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SERIES
△9	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SERIES

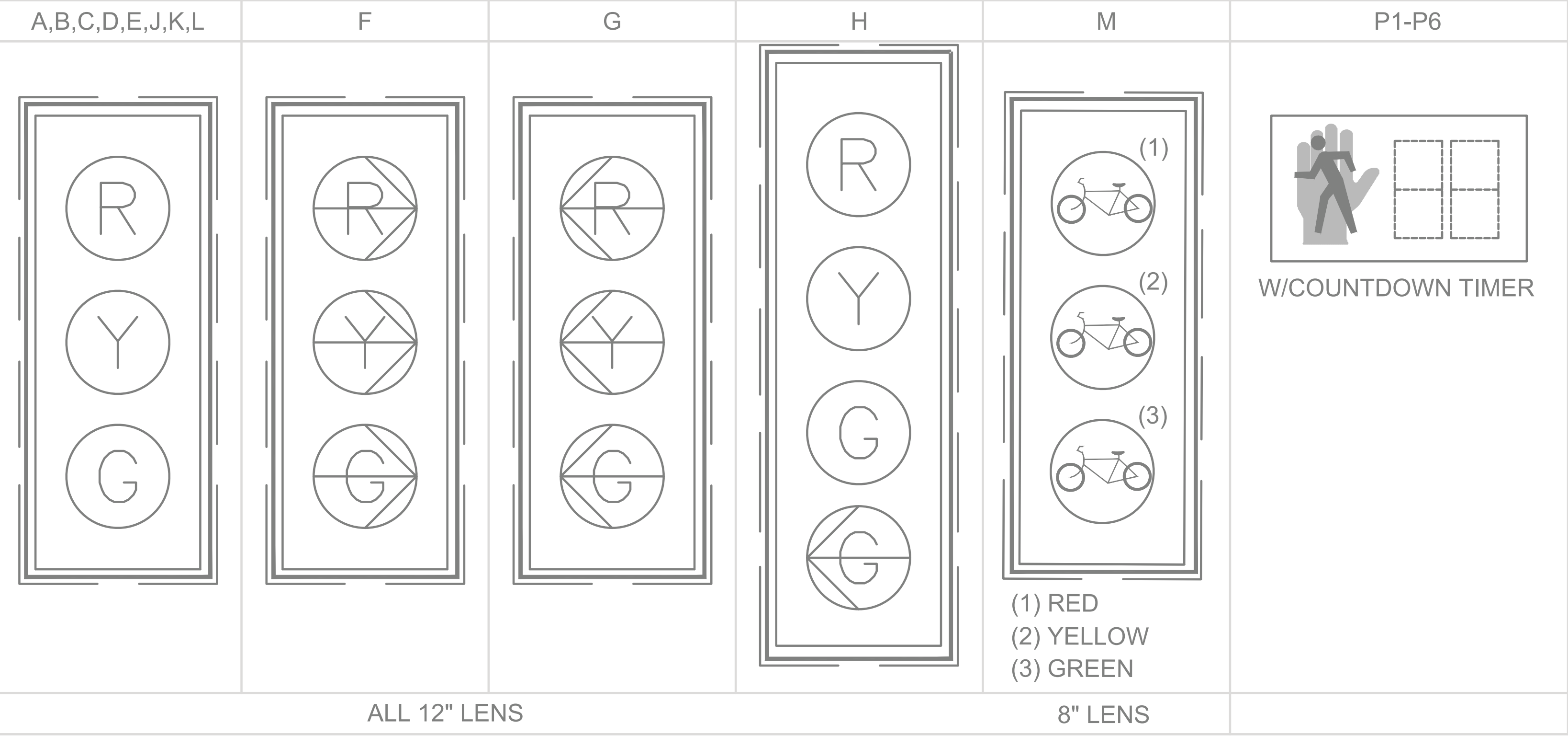
NOTE: DELAY AND EXTENSION TIMINGS ARE PROGRAMMED IN THE CONTROLLER ONLY

EXIST VIDEO DETECTOR DATA

DETECTOR NO.	ZONE SIZE	CAMERA	DELAY /EXT	CALL PHASE
△10	TO BE FIELD ADJUSTED	V1	0	Ø3

NOTE:
DELAY AND EXTENSION TIMINGS ARE PROGRAMMED IN THE CONTROLLER ONLY

EXIST SIGNAL HEAD DATA



NOTES:
1. ALL SIGNAL HEADS ARE RIGID MOUNTED.
2. ALL SIGNAL HEADS ARE EQUIPPED WITH 5"± NON-LOUVERED BACKPLATES. ALL BACKPLATES HAVE CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS ARE EQUIPPED TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS ARE EQUIPPED W/L.E.D. MODULES.

LIST OF MAJOR ITEMS REQUIRED

O'BRIEN HIGHWAY AT THIRD STREET

PAY ITEM	QUANTITY	DESCRIPTION
816.01	1	MODIFY EXIST TS CONTROLLER (SIEMENS M60) TO PROPOSED TIMINGS SHOWN
	1	FIELD MONITORING UNIT MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-500-085-02) WITH 10 YEAR SERVICE/DATA PLAN
	1	PRE-EMPTION INTERFACE CARD MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-900-016)

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 58 OF 120

LOCATION 2

CONSTRUCTION NOTES

1. SEE SHEET 59 FOR TRAFFIC SIGNAL DATA.
2. SEE SHEET 47 FOR SIGNAGE & STRIPING PLAN.
3. RETAIN ALL EXISTING TS EQUIPMENT AND ALL TS CONDUIT AT THE INTERSECTION OF O'BRIEN HIGHWAY/WATER STREET, UNLESS OTHERWISE NOTED.
4. REMOVE ALL EXISTING TS EQUIPMENT AND ABANDON ALL TS CONDUIT AT THE MIDBLOCK SIGNAL (AT LECHMERE STATION), UNLESS OTHERWISE NOTED.
5. EACH LOOP GROUP SHALL BE SPLICED IN SINGLE PULL BOX AND WIRED TO SEPARATE CONTROLLER INPUT.

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CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 59 OF 120

LOCATION 2

11554-TSIG.DWG
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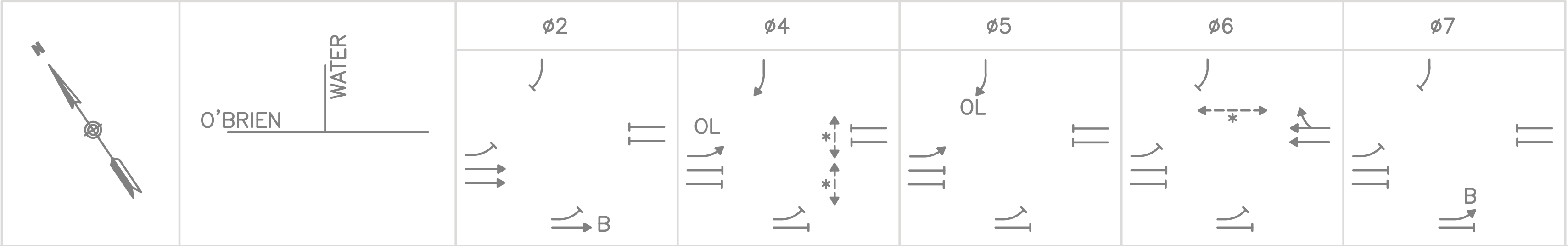


SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

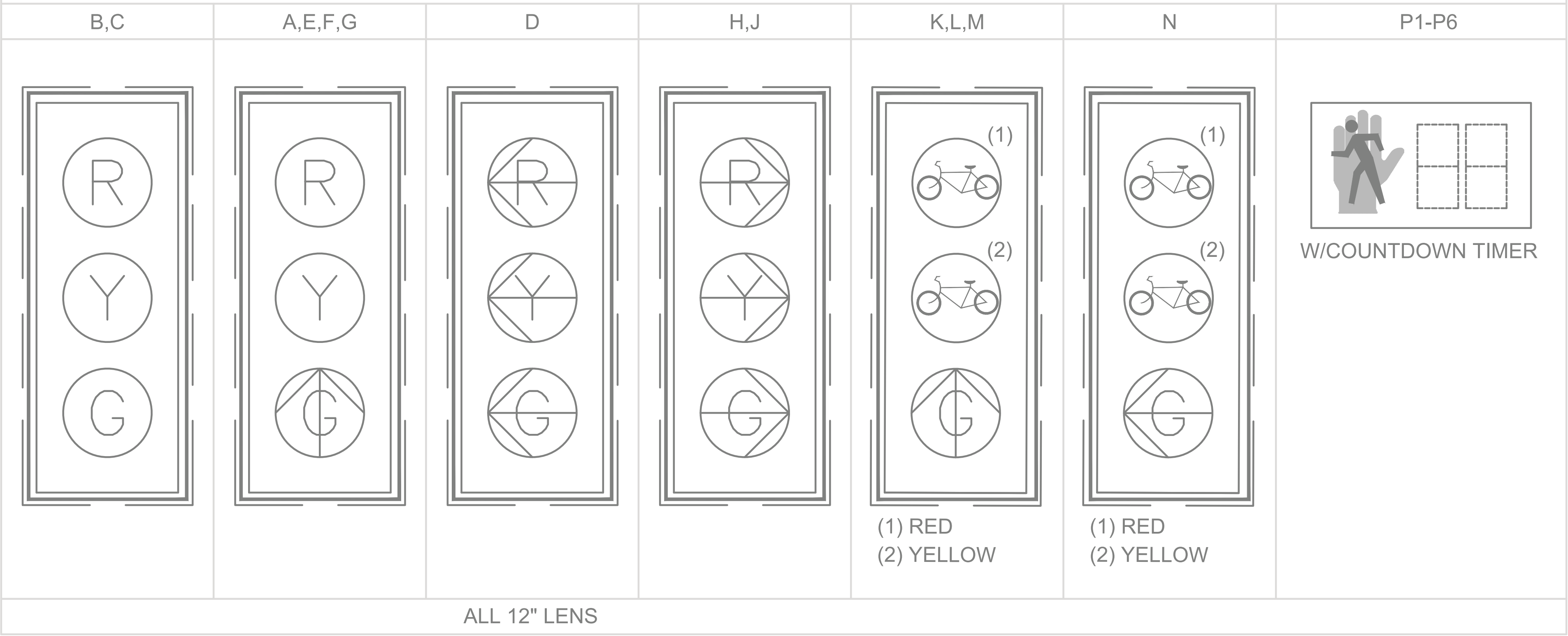
APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASH
O'BRIEN HWY	NB	A	R	R	R	R	R	R	R	R	R	↑G	Y	R	R	R	R	FY
O'BRIEN HWY	NB	B,C	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FY
O'BRIEN HWY	SB	D	←R–	←R–	←R–	←G–	←Y–	←R–	←G–	←Y–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←FR–
O'BRIEN HWY	SB	E,F,G	↑G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
WATER ST	WB	H,J	–R→	–R→	–R→	–G→	–Y→	–R→	–G→	–Y→	–R→	–R→	–R→	–R→	–R→	–R→	–R→	–FR→
O'BRIEN HWY BIKE	SB	K	↑G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
BIKE JUGHANDLE	EB	L,M	R	R	R	R	R	R	R	R	R	R	R	R	↑G	Y	R	FR
BIKE JUGHANDLE	EB	N	R	R	R	R	R	R	R	R	R	R	R	R	←G–	Y	R	FR
PEDESTRIAN X-ING	NB-SB	P1-P2	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P3-P6	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
TIMING IN SECONDS																		
MINIMUM GREEN (INITIAL)			10			6			6			10			11			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			2			2			2			2			
MAXIMUM 1			35			25			30			35			25			
MAXIMUM 2			65			35			30			45			30			
YELLOW CLEARANCE				4			3			3			4					
RED CLEARANCE					1			3			3			1				
BIKE TIMINGS																3.5	6	
PEDESTRIAN WALK						7						7						
PEDESTRIAN CLEARANCE						19						10						
DETECTOR MEMORY			NON-LOCK			–			NON-LOCK			NON-LOCK			NON-LOCK			
RECALL			MIN			PED**			OFF			MIN			OFF			

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES				
TIMING PLAN	CYCLE	OFFSET	ø2	ø4	ø5	ø6	ø7
1/1/1 M-F 5:30AM-10AM	110	80	70	40	35	35	40
2/1/1 M-F 3PM-8PM	100	88	66	34	15	51	34
3/1/1 M-F 10AM-3PM, M-F 8PM-11PM, SAT/SUN 10AM-6PM	90	86	56	34	15	41	34
4/1/1 ALL OTHER TIMES	80***	0	52	28	15	37	28
MODE			COORD ø			COORD ø	

NOTES:

1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION.
3. ** PEDESTRIAN RECALL SHALL BE SET FOR COORDINATION PATTERNS 1/1/1, 2/1/1, & 3/1/1.
4. *** CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN MOVEMENT.
5. OL = OVERLAP
6. B = BICYCLE
7. ø4&ø7 DUAL ENTRY
8. MAXIMUM 1 = ALL OTHER TIMES
9. MAXIMUM 2 = DURING COORDINATION
10. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
11. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
12. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SIGNAL HEAD DATA



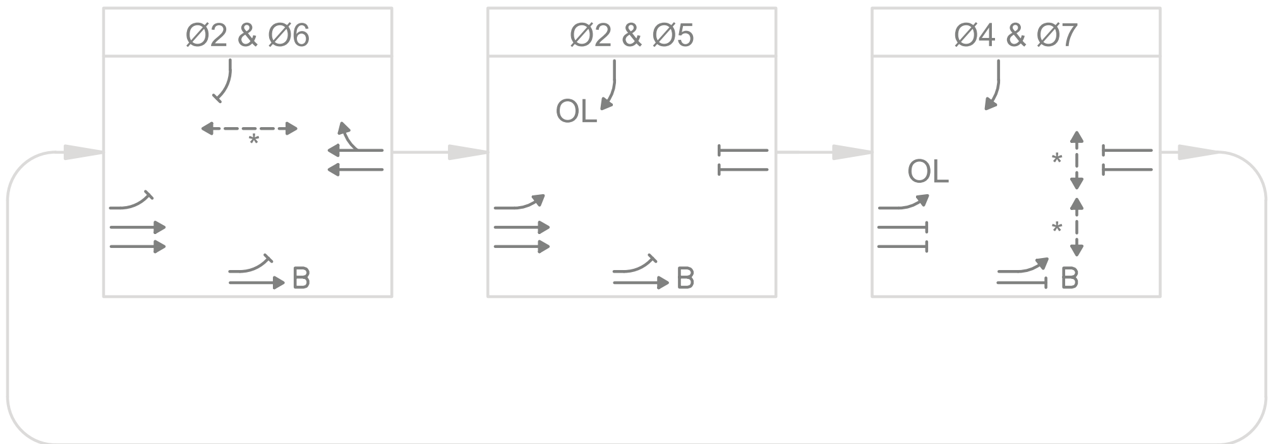
NOTES:

1. ALL SIGNAL HEADS ARE RIGID MOUNTED.
2. ALL SIGNAL HEADS ARE EQUIPPED WITH 5"± NON-LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS ARE EQUIPPED TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS ARE EQUIPPED W/L.E.D. MODULES.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

PREFERENTIAL PHASE SEQUENCE



OL - OVERLAP; * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2 OR D3 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D3 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1	↗ → →	Ø2&Ø5
D2	2	↖ ← ←	Ø6
D3	3	↓	Ø4

LOOP DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
1	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
2	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
3	1-4'X6'	4	PRESENCE	0	Ø6	BIKE/ SINGLE
4	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø5	SERIES
5	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
6	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
7	1-6'X20' (BACK) 1-6'X25' (FRONT) QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SERIES
8	1-4'X6'	4	PRESENCE	0	Ø4	BIKE/ SINGLE
9	1-5'X10'	4	PRESENCE	0	Ø7	BIKE/ SINGLE

NOTES: 1. DELAY AND EXTENSION TIMINGS ARE PROGRAMMED IN THE CONTROLLER ONLY
2. AN ACTIVE CALL ON BICYCLE DETECTOR 9 SHALL CALL AND EXTEND BOTH Ø4&Ø7.

LIST OF MAJOR ITEMS REQUIRED

O'BRIEN HIGHWAY AT WATER STREET

PAY ITEM	QUANTITY	DESCRIPTION
816.02	1	MODIFY EXIST TS CONTROLLER (SIEMENS M60) TO PROPOSED TIMINGS SHOWN
	5	WIRE LOOP DETECTOR
	1	FIELD MONITORING UNIT MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-500-085-02) WITH 10 YEAR SERVICE/DATA PLAN
	1	PRE-EMPTION INTERFACE CARD MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-900-016)

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 60 OF 120

LOCATIONS 3, 4 & 6

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N
NORTH FIRST STREET
EAST STREET
MONSIGNOR O'BRIEN HIGHWAY
CAMBRIDGE STREET
PROP 10' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 22+36.0, 62.5' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 22+41.5, 05.5' LT
PROP TS POLE W/30' MAST ARM W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 22+21.5, 48.0' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 22+24.5, 03.5' LT
BEGIN PROP SHLO ALTERATION
PROP CITY LAYOUT ALTERATION
PROP TS POLE W/35' MAST ARM W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 23+09.5, 67.5' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 23+31.0, 05.0' LT
PROP 10' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 23+26.0, 59.5' LT
PROP SHLO ALTERATION
NORTH FIRST STREET LIMIT OF PAVING STA 106+70.00
N 2960693.0115 E 770645.0240
EAST STREET LIMIT OF PAVING
N 2960519.8930 E 770815.8965
PRIVATE LAYOUT
END PROP SHLO ALTERATION
PROP CITY LAYOUT ALTERATION
N/F MBTA 13117/113, 13150 14199/193 (PLAN No. 1101 OF 19402/34 (PLAN No. 1358 OF 1961) PARCEL MBTA-2 (PLAN No. 577 OF 2017)
N/F ARCHSTONE NORTH POINT II LLC 56599/194 (PLAN No. 90 OF 2008)
DW NP Q, R, V PROPERTY LLC 69489 (PLAN No. 57 (PLAN No. 6 PARCEL Q-3
PROP SERVICE CONNECTION
PROP POWER SOURCE
PROP 12 PAIR 19 AWG 40-2 IMSA INTERCONNECT CABLE BETWEEN TS CABINETS AT N. FIRST ST AND CAMBRIDGE ST
PROP VIDEO DETECTION CAMERA (TYP)
PROP SHLO ALTERATION
PROP 10' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 22+36.0, 50.5' RT
PROP 3" CONDUIT & PB's BETWEEN GORE STREET AND N. FIRST STREET FOR FUTURE USE
PROP TS POLE W/40' MAST ARM W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 22+48.5, 64.0' RT
PROP TS POLE W/45' MAST ARM STA 23+32.0, 49.0' RT
PROP 10' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 23+34.0, 64.0' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 23+49.5, 51.0' RT
PROP TS 2 TYPE 1 ATC TS CONTROLLER W/TYPE 6 CABINET & FOUNDATION W/GPS SYNCH UNIT STA 23+72.0, 51.0' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 23+45.0, 06.0' LT
PROP CONDUIT FOR FUTURE USE
END PROP SHLO ALTERATION
LECHMERE BUS TERM ONE STORY BRICK BUILDING
1 STORY MBTA STATION
N/F TWO CANAL PARK, LLC 47840/24
CITY LAYOUT
SHLO
ONLY
P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14
PB
CONTINUED ON SHEET NO. 58
CONTINUED ON SHEET NO. 64
CONTINUED ON SHEET NO. 66
0 20 50 100
SCALE: 1" = 20'

CONSTRUCTION NOTES

1. SEE SHEET 61 FOR TRAFFIC SIGNAL DATA.
2. SEE SHEET 48 FOR SIGNAGE AND STRIPING PLANS.
3. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
7. ALL TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE FROM LEVEL LANDING AREA PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 61 OF 120

LOCATION 3

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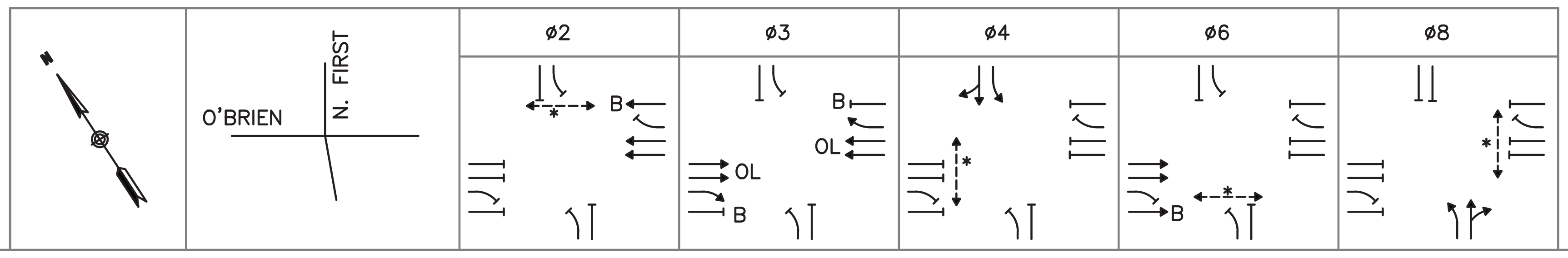


SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASH
O'BRIEN HWY	NB	A,B	↑G	Y	R	↑G	Y	R	R	R	R	R	R	R	R	R	R	FY
O'BRIEN HWY	NB	C	—R→	—R→	—R→	—G→	—Y→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—FR→
O'BRIEN HWY (BIKE)	NB	D,T	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
O'BRIEN HWY	SB	E,F	R	R	R	↑G	Y	R	R	R	R	↑G	Y	R	R	R	R	FY
O'BRIEN HWY	SB	G	—R→	—R→	—R→	—G→	—Y→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—FR→
O'BRIEN HWY (BIKE)	SB	H,S	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FY
NORTH FIRST ST	EB	J	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FY—	←Y—	←R—	←FR—
NORTH FIRST ST	EB	K,L,M	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FR
NORTH FIRST ST	WB	N	←R—	←R—	←R—	←R—	←R—	←R—	←FY—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
NORTH FIRST ST	WB	P,Q,R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FR
PEDESTRIAN X-ING	NB-SB	P1-P2	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P3-P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P7-P8	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P9-P12	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	OUT

TIMING IN SECONDS

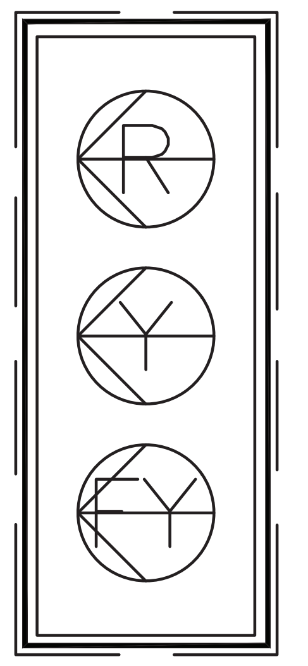
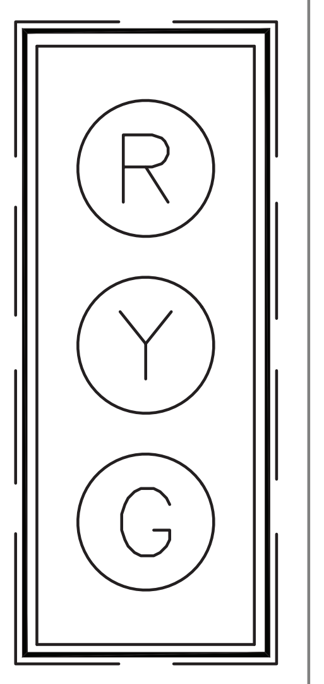
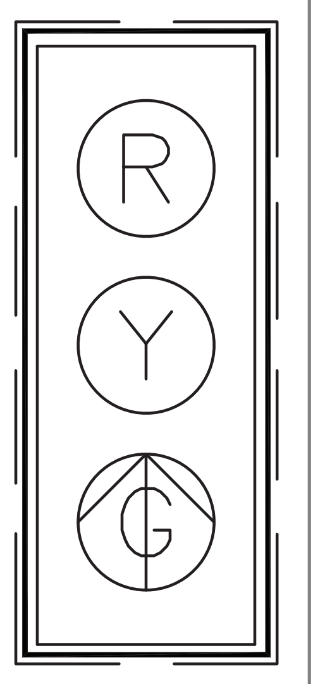
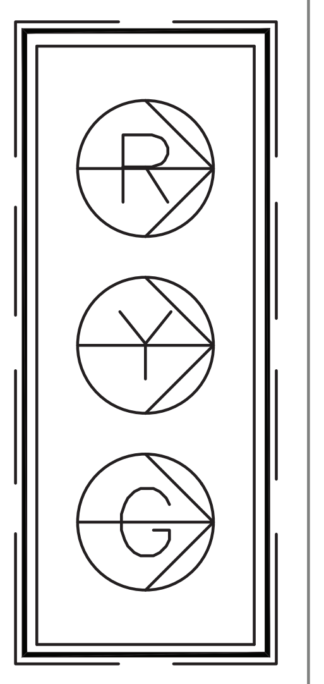
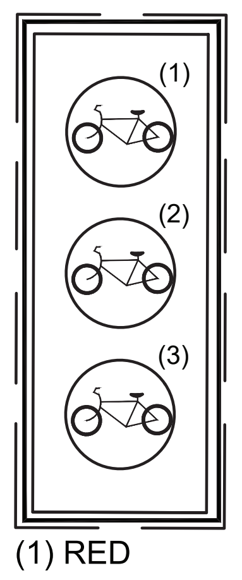
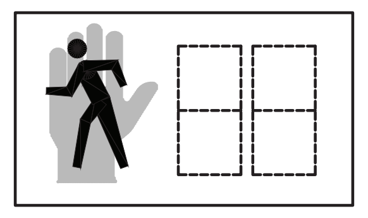
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
MINIMUM GREEN (INITIAL)	10			6			6			10			6			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)	2			2			2			2			2			
MAXIMUM 1	35			25			25			35			25			
MAXIMUM 2	40			20			35			40			35			
YELLOW CLEARANCE		4			3.5			4			4			3		
RED CLEARANCE			2			1			3			2			4	
PEDESTRIAN WALK	7						8			8			7			
PEDESTRIAN CLEARANCE	15						19			14			22			
BICYCLE CLEARANCE		3.5	7								3.5	6.5				

	ø2	ø3	ø4	ø6	ø8
DETECTOR MEMORY	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK
RECALL	MIN**	OFF	OFF**	MIN**	OFF**

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES				
TIMING PLAN	CYCLE	OFFSET	ø2	ø3	ø4	ø6	ø8
1/1/1 M-F 5:30AM-10AM	110	0	45	25	40	45	40
2/1/1 M-F 3PM-8PM	100	0	40	23	37	40	37
3/1/1 M-F 10AM-3PM, M-F 8PM-11PM, SAT/SUN 10AM-6PM	90	0	33	20	37	33	37
4/1/1 ALL OTHER TIMES	80***	0	30	20	30	30	30
MODE			COORD ø			COORD ø	

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION.
3. ** PEDESTRIAN RECALL SHALL BE SET FOR COORDINATION PATTERNS 1/1/1, 2/1/1, & 3/1/1.
4. *** CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN MOVEMENT.
5. OL = OVERLAP
6. B = BICYCLE
7. ø4&ø8 DUAL ENTRY.
8. MAXIMUM 1 = ALL OTHER TIMES
9. MAXIMUM 2 = DURING COORDINATION
10. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
11. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.

SIGNAL HEAD DATA

J,N	K,L,M,P,Q,R	A,B,E,F	C,G	D,H,S,T	P1-P12
				 (1) RED (2) YELLOW (3) GREEN	 W/COUNTDOWN TIMER
ALL 12" LENS				ALL 8" LENS	

NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± NON-LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED W/L.E.D. MODULES.

SEQUENCE & TIMING NOTES:

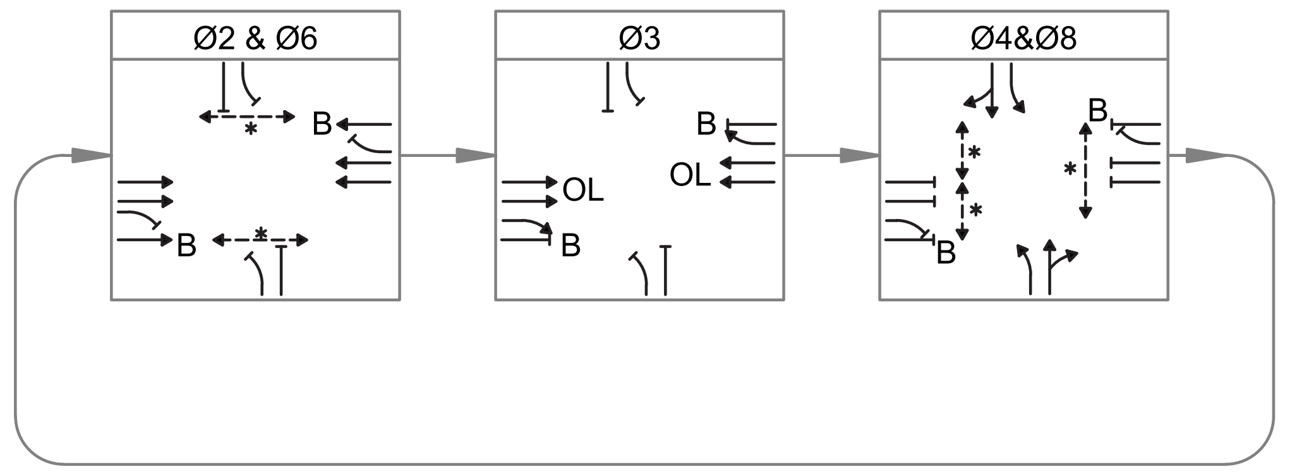
1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.

2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.

3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.

4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

PREFERENTIAL PHASE SEQUENCE



OL - OVERLAP, B = BICYCLE; * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	O'BRIEN NB THRU LANE (LEFT)	C1	0	Ø2
2	O'BRIEN NB THRU LANE (RIGHT)	C1	0	Ø2
3	O'BRIEN NB RIGHT-TURN LANE	C1	0	Ø3
4	O'BRIEN NB BIKE ZONE	C1	0	Ø2
5	O'BRIEN SB THRU LANE (LEFT)	C2	0	Ø6
6	O'BRIEN SB THRU LANE (RIGHT)	C2	0	Ø6
7	O'BRIEN SB RIGHT-TURN LANE	C2	0	Ø3
8	O'BRIEN SB BIKE ZONE	C2	0	Ø6
9	N. FIRST EB LEFT-TURN LANE	C2	0	Ø8
10	N. FIRST EB THRU-RIGHT LANE	C2	0	Ø8
11	N. FIRST EB BIKE ZONE	C2	0	Ø8
12	N. FIRST WB LEFT-TURN LANE	C1	0	Ø4
13	N. FIRST WB THRU-RIGHT LANE	C1	0	Ø4
14	N. FIRST WB BIKE ZONE	C1	0	Ø4
15	O'BRIEN NB TWO-STAGE TURN BOX	C1	0	Ø4
16	O'BRIEN SB TWO-STAGE TURN BOX	C2	0	Ø8
17	N. FIRST EB BIKE ZONE	C1	0	Ø2
18	N. FIRST WB BIKE ZONE	C2	0	Ø6

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLAN, AND ADJUSTING/READJUSTING DETECTION ZONES IN THE PRESENCE OF THE ENGINEER.
3. DETECTION ZONES SHALL COUNT VOLUME AND OCCUPANCY.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1	⇉↘	Ø6
D2	2	↖⇇	Ø2
D3	3	↰↑↱	Ø8
D4	4	↙↓↘	Ø4

EMERGENCY VEHICLE PRE-EMPTION OPERATION
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.

2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)

3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.

4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.

5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.

6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

LIST OF MAJOR ITEMS REQUIRED

O'BRIEN HIGHWAY AT NORTH FIRST STREET

PAY ITEM	QUANTITY	DESCRIPTION
815.3	1	8Ø TS 2 TYPE 1 ATC CONTROLLER W/ADAPTIVE CONTROL IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD (CONFIGURATION 4)
	1	GPS SYNCH UNIT
	1	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 35' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 40' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 45' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	5	TS POST 8' STANDARD INCL. FOUNDATION
	4	TS POST 10' STANDARD INCL. FOUNDATION
	12	SIGNAL HEAD, 3-SECTION, 12" LENSES
	4	SIGNAL HEAD, 3-SECTION, 8" LENSES (W/BIKE DISPLAYS)
	2	SIGNAL HEAD, 3-SECTION, 12" LENSES (W/FLASHING YELLOW ARROW)
	12	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	9	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	3	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	SINGLE POINT VIDEO DETECTION SYSTEM (2 CAMERAS. VDP & CABLES)
	1	VIDEO BIU
	1	ETHERNET OVER COPPER ACCESS DEVICE/SWITCH
	4	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	2	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	1	FIELD MONITORING UNIT MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-500-085-02) WITH 10 YEAR SERVICE/DATA PLAN
	1	PRE-EMPTION INTERFACE CARD MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-900-016)
804.3	780'±	3" CONDUIT, SCHEDULE 80, TYPE NM
	165'±	3" CONDUIT, SCHEDULE 80, TYPE NM (INTERCONNECT IN TRIANGLE)
	445'±	3" CONDUIT, SCHEDULE 80, TYPE NM (INTERCONNECT TO GORE)
811.31	12	PULL BOX-12"x12"
	5	PULL BOX-12"x12" (INTERCONNECT)
815.923	80'±	12 PAIR TWISTED 19 AWG SHIELDED COMMUNICATION CABLE IMSA 40-2

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 62 OF 120

LOCATIONS 3, 4 & 6

Plotted on 13-Jul-2021 12:09 PM
11554-TSIG.DWG

N
NORTH FIRST STREET
MONSIGNOR O'BRIEN HIGHWAY
EAST STREET
CAMBRIDGE STREET
PROP CITY LAYOUT ALTERATION
NORTH FIRST STREET LIMIT OF PAVING STA 106+70.00
N 2960693.0115
E 770645.0240
EAST STREET LIMIT OF PAVING
N 2960519.8930
E 770815.8965
PRIVATE LAYOUT
PROP TS POLE W/45' MAST ARM W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 24+68.0, 66.0' LT
PROP 10' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 24+85.0, 7.0' LT
END PROP SHLO ALTERATION
PROP CITY LAYOUT ALTERATION
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 24+79.5, 74.0' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 25+30.5, 68.5' LT
PROP 10' TS POST STA 25+54.0, 52.5' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 25+86.0, 53.5' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 25+84.0, 03.0' LT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 25+94.0, 03.0' LT
N/F DW NP Q, R, V PROPERTY, LLC 69489/200 (PLAN No. 577 OF 2017) (PLAN No. 644 OF 2017) PARCEL Q-3
N/F MBTA PARCEL MBTA-2
N/F ARCHSTONE NORTH POINT II LLC 56599/194 (PLAN No. 90 OF 2008)
PROP SHLO ALTERATION
BEGIN PROP SHLO ALTERATION
PROP VIDEO DETECTION CAMERA (TYP)
PROP EMERGENCY PRE-EMPTION DETECTOR (TYP)
PROP EMERGENCY PRE-EMPTION STROBE (TYP)
PROP SERVICE CONNECTION
PROP POWER SOURCE
PROP COMMUNICATION CONNECTION (FOR FUTURE USE)
SHLO
LECHMERE BUS TERMINAL ONE STORY BRICK BUILDING
PROP SHLO ALTERATION
PROP 3" CONDUIT & PB's BETWEEN GORE STREET AND N. FIRST STREET FOR FUTURE USE
PROP SHLO ALTERATION
PROP 12 PAIR 19 AWG 40-2 IMSA INTERCONNECT CABLE BETWEEN TS CABINETS AT N. FIRST ST AND EAST ST
END PROP SHLO ALTERATION
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 24+71.0, 05.0' LT
PROP TS POLE W/20' MAST ARM STA 26+19.5, 68.5' RT
PROP 12 PAIR 19 AWG 40-2 IMSA INTERCONNECT CABLE BETWEEN TS CABINETS AT CAMBRIDGE ST AND LAND BLVD
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 25+84.0, 41.5' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 25+93.5, 86.5' RT
PROP TS POLE W/50' MAST ARM STA 25+58.0, 53.5' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 25+77.0, 55.0' RT
PROP TS POLE W/30' MAST ARM STA 25+40.0, 70.0' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 25+45.5, 64.0' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 25+84.0, 59.5' RT
PROP 10' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(R) STA 24+73.0, 51.0' RT
PROP TS 2 TYPE 1 ATC TS CONTROLLER W/TYPE 6 CABINET & FOUNDATION STA 24+52.5, 51.0' RT
CITY LAYOUT
I STORY MBTA STATION
N/F TWO CANAL PARK, LLC 47840/24
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
PB
C1
C2
D1
D2
D3
D4
ONLY
PC +78.78
SCALE: 1" = 20'
0
20
50
100

CONTINUED ON SHEET NO. 58

CONTINUED ON SHEET NO. 64

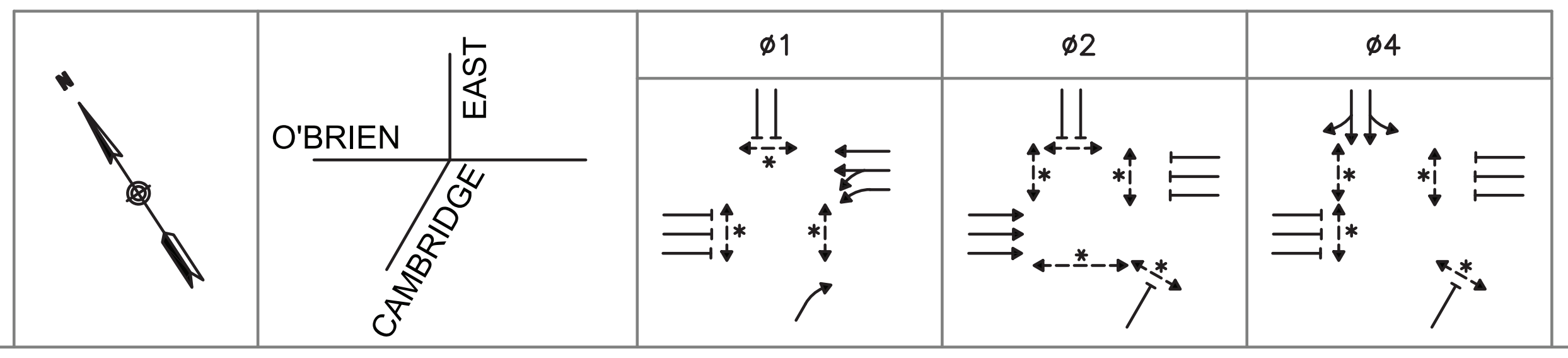
CONTINUED ON SHEET NO. 66

CONSTRUCTION NOTES

1. SEE SHEET 63 FOR TRAFFIC SIGNAL DATA.
2. SEE SHEET 48 FOR SIGNAGE AND STRIPING PLANS.
3. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
7. ALL TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE FROM LEVEL LANDING AREA PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 63 OF 120

LOCATION 4



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	FLASH
O'BRIEN HWY	NB	A	←G– ↑G	Y	R	R	R	R	R	R	R	FY
O'BRIEN HWY	NB	B,D	↑G	Y	R	R	R	R	R	R	R	FY
O'BRIEN HWY	NB	C	←G–	←Y–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←FY–
O'BRIEN HWY	SB	E,F,G,H	R	R	R	↑G	Y	R	R	R	R	FR
EAST ST	WB	J,L	R	R	R	R	R	R	G	Y	R	FR
EAST ST	WB	K	R	R	R	R	R	R	←G– G	Y	R	FR
CAMBRIDGE ST	EB	M,N	↗G	↗Y	↗R	↗R	↗R	↗R	↗R	↗R	↗R	↗FR
CAMBRIDGE ST	EB	P	G	Y	R	R	R	R	R	R	R	FR
PEDESTRIAN X-ING	EB-WB	P1-P2	DW	DW	DW	W/FDW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P3-P4	W/FDW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P5-P6	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P7-P8	DW	DW	DW	W/FDW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P9-P10	W/FDW	DW	DW	W/FDW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P11-P12	DW	DW	DW	W/FDW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P13-P14	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
TIMING IN SECONDS												
MINIMUM GREEN (INITIAL)			10			10			6			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			2			2			
MAXIMUM 1			35			35			25			
MAXIMUM 2			40			45			20			
YELLOW CLEARANCE				3.5			4			3.5		
RED CLEARANCE					4.5			2			2.5	
PEDESTRIAN WALK			7			8			7			
PEDESTRIAN CLEARANCE			7			7			7			
DETECTOR MEMORY			NON-LOCK			NON-LOCK			NON-LOCK			
RECALL			MIN**			MIN**			MIN**			

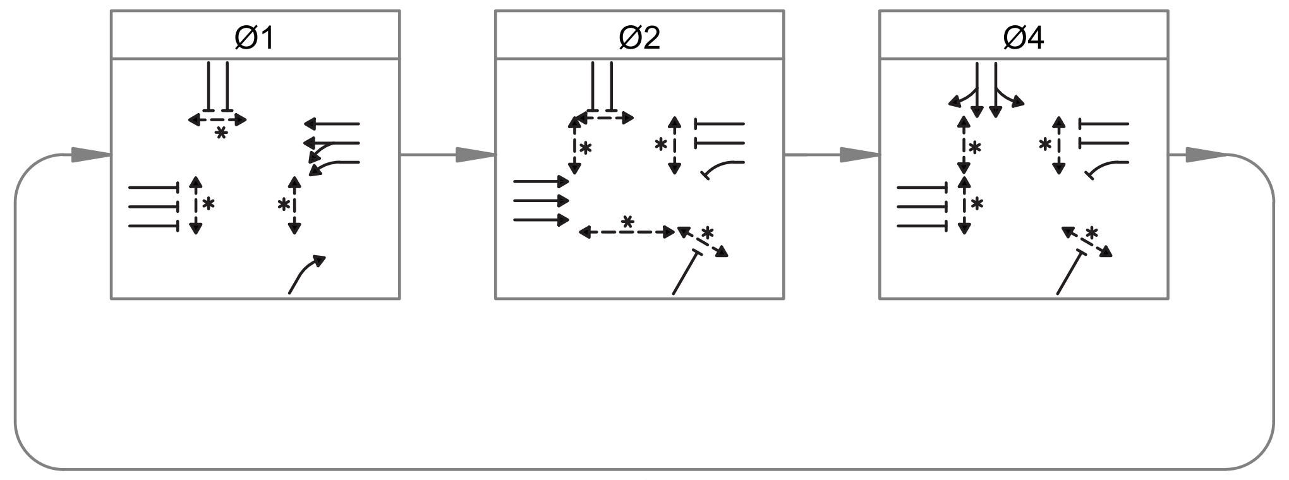
COORDINATION DATA			COORDINATION PHASE SPLIT TIMES		
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø4
1/1/1 M-F 5:30AM-10AM	110	10	35	50	25
2/1/1 M-F 3PM-8PM	100	74	45	30	25
3/1/1 M-F 10AM-3PM, M-F 8PM-11PM, SAT/SUN 10AM-6PM	90	75	35	33	22
4/1/1 ALL OTHER TIMES	80***	70	28	32	20
MODE			COORD ø (2/1/1) COORD ø (3/1/1) COORD ø (4/1/1)	COORD ø (1/1/1)	

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION.
3. **PEDESTRIAN RECALL SHALL BE SET FOR COORDINATION PATTERNS 1/1/1, 2/1/1, & 3/1/1.
4. *** CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN MOVEMENT.
5. OL = OVERLAP
6. PHASE 2 SHALL FOLLOW PHASE 1.
7. MAXIMUM 1 = ALL OTHER TIMES
8. MAXIMUM 2 = DURING COORDINATION
9. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
10. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

PREFERENTIAL PHASE SEQUENCE



OL - OVERLAP; * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

EMERGENCY VEHICLE PRE-EMPTION OPERATION
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1	⇶	Ø2
D2	2	⬱	Ø1
D3	3	↗	Ø1
D4	4	↙↓↓↘	Ø4

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	O'BRIEN NB LEFT-TURN LANE	C1	0	Ø1
2	O'BRIEN NB LEFT-THRU LANE	C1	0	Ø1
3	O'BRIEN NB THRU LANE	C1	0	Ø1
4	O'BRIEN NB BIKE ZONE	C1	0	Ø1
5	O'BRIEN SB THRU LANE (LEFT)	C2	0	Ø2
6	O'BRIEN SB THRU LANE (CENTER)	C2	0	Ø2
7	O'BRIEN SB THRU LANE (RIGHT)	C2	0	Ø2
8	O'BRIEN SB BIKE ZONE	C2	0	Ø2
9	CAMBRIDGE EB RIGHT-TURN LANE	C2	0	Ø1
10	CAMBRIDGE EB BIKE ZONE	C2	0	Ø1
11	EAST WB LEFT-THRU LANE	C1	0	Ø4
12	EAST WB THRU-RIGHT LANE	C1	0	Ø4
13	EAST WB BIKE ZONE	C1	0	Ø4
14	O'BRIEN NB TWO-STAGE TURN BOX	C1	0	Ø4
15	EAST WB TWO-STAGE TURN BOX	C2	0	Ø2

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLAN, AND ADJUSTING/READJUSTING DETECTION ZONES IN THE PRESENCE OF THE ENGINEER.
3. DETECTION ZONES SHALL COUNT VOLUME AND OCCUPANCY.

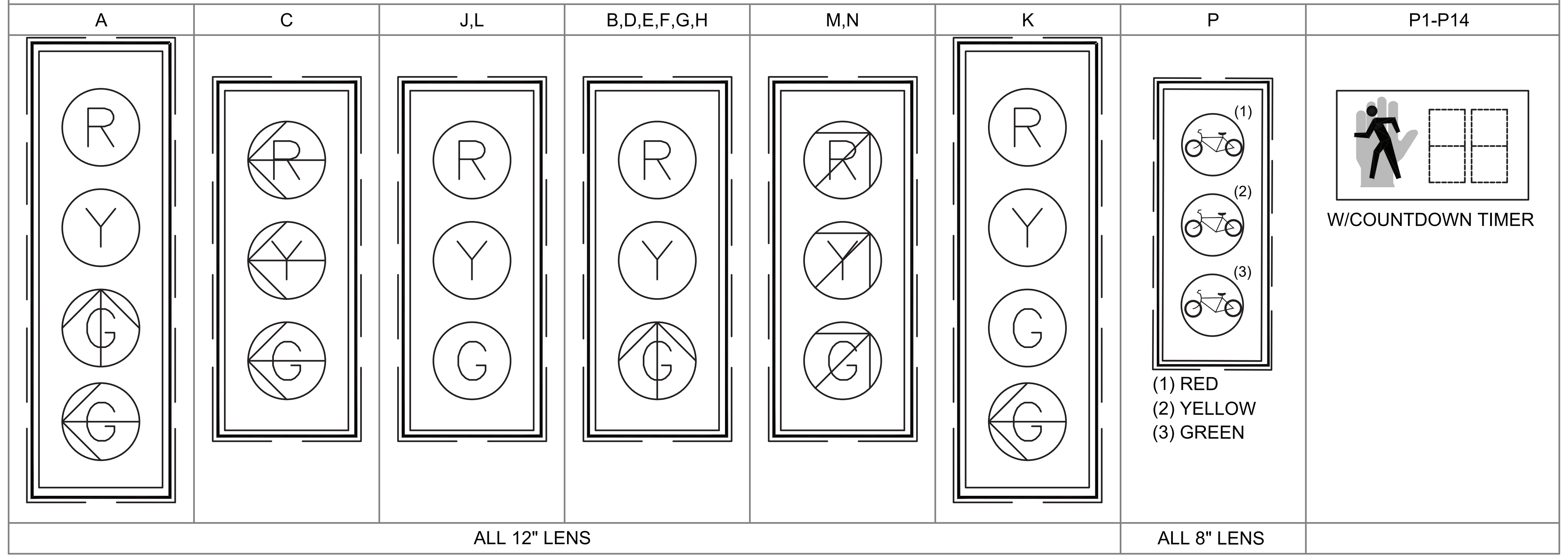
LIST OF MAJOR ITEMS REQUIRED

O'BRIEN HIGHWAY AT EAST STREET/CAMBRIDGE STREET

PAY ITEM	QUANTITY	DESCRIPTION
816.04	1	8Ø TS 2 TYPE 1 ATC CONTROLLER W/ADAPTIVE CONTROL IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 20' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 45' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 50' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	11	TS POST 8' STANDARD INCL. FOUNDATION
	3	TS POST 10' STANDARD INCL. FOUNDATION
	11	SIGNAL HEAD, 3-SECTION, 12" LENSES
	2	SIGNAL HEAD, 4-SECTION, 12" LENSES
	1	SIGNAL HEAD, 3-SECTION, 8" LENSES (W/BIKE DISPLAYS)
	14	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	7	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	7	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	SINGLE POINT VIDEO DETECTION SYSTEM (2 CAMERAS. VDP & CABLES)
	1	VIDEO BIU
	1	ETHERNET OVER COPPER ACCESS DEVICE/SWITCH
	4	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	2	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	1	HIGH SPEED COMMUNICATIONS CONVERTER & ROUTER
804.3	800'±	3" CONDUIT, SCHEDULE 80, TYPE NM
	1150'±	3" CONDUIT, SCHEDULE 80, TYPE NM (INTERCONNECT TO LAND)
811.31	11	PULL BOX-12"x12"
	8	PULL BOX-12"x12" (INTERCONNECT TO LAND)
813.792	1150'±	12 PAIR TWISTED 19 AWG SHIELDED COMMUNICATION CABLE IMSA 40-2

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING

SIGNAL HEAD DATA



NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± NON-LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED W/L.E.D. MODULES.

11554-TSIG.DWG Plotted on 13-Jul-2021 12:09 PM

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 64 OF 120

LOCATION 5

Plotted on 13-Jul-2021 12:09 PM

11554-TSIG.DWG

N
CHARLESTOWN AVENUE
MUSEUM WAY
LAND BOULEVARD
CHARLES RIVER DAM ROAD
PROJECT LIMIT
STA 34+35.00
N 2959871.1033
E 771485.9723
N/F MASSACHUSETTS COMMONWEALTH OF COMMISSION METROPOLITAN DISTRICT DOC. No. 498321
N/F COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 498321
N/F MASSACHUSETTS COMMONWEALTH OF DOC. No. 662950 DEPARTMENT OF PUBLIC WORKS
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F OF COMMONWEALTH MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 531451
BENCHMARK F CHISEL SQ. ON WALL EL=30.14'
BENCHMARK G CHISEL SQ. ON PAD EL=26.24'
MAXIMUM BUILDING HEIGHT - 150 FEET
BUILDING HEIGHT REGULATION LINE
DRAIN AND SEWER EASEMENT 13302/486
PERPETUAL RIGHT AN 12222/250
BRIDGE ARCH
CHAIN LINK FENCE
CONC. WALL w/CHAIN LINK FENCE
STOP LINE
CROSS WALK
ONLY ONLY
R&S EXIST SIGNAL HEADS
PROP SIGNAL HEADS
PROP EMERGENCY PRE-EMPTION DETECTOR (TYP)
PROP EMERGENCY PRE-EMPTION STROBE (TYP)
CONSTRUCT OVER EXIST CONDUIT
RET EXIST CONDUIT
CONST PROP PB OVER EXIST COMM CONDUIT
PROP TS CONTROLLER IN EXIST CABINET
PROP 12 PAIR 19 AWG 40-2 IMSA INTERCONNECT CABLE BETWEEN TS CABINETS AT CAMBRIDGE ST AND LAND BLVD
PROP VIDEO DETECTION CAMERAS MTD ON EXIST TS POLE
PROP TS POLE W/30' MAST ARM STA 33+68.5, 70.5' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 33+84.0, 84.0' RT
PROP 8' TS POST W/PED SIGNAL HEAD W/APS PUSH BUTTON W/R10-3e(L) STA 34+05.5, 52.0' RT
CONTINUED ON SHEET NO. 60
SHLO
P1
P2
P3
P4
P5
P6
P7
P8
PB
D1
D2
D3
D4
V1
V2
V3
V4
V5
V6
A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
S
T
V
W
X
33
35
36
37
38
39
401
402
403
501
502
1
2
3
4
5
6
7
8
9
10
11
12
0
20
50
100
SCALE: 1" = 20'

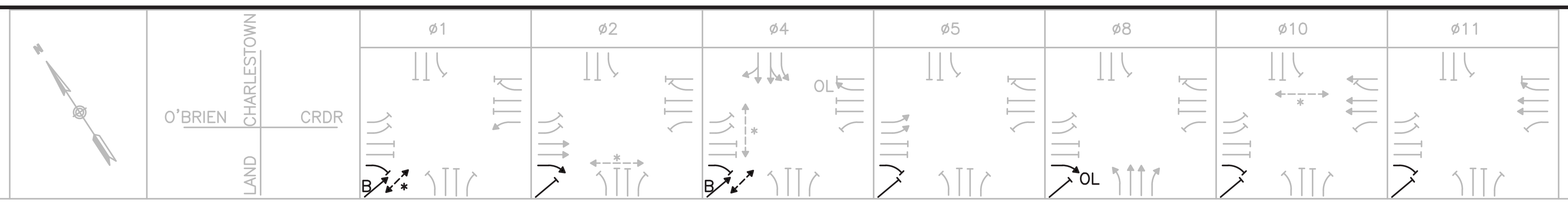
CONSTRUCTION NOTES

1. SEE SHEETS 65 FOR TRAFFIC SIGNAL DATA FOR O'BRIEN HIGHWAY AT LAND BOULEVARD/CHARLESTOWN AVENUE.
2. SEE SHEETS 50 FOR SIGNAGE AND STRIPING PLAN.
3. RETAIN ALL EXISTING TS EQUIPMENT AND ALL TS CONDUIT UNLESS OTHERWISE NOTED.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. TRAFFIC SIGNAL FOUNDATIONS TO BE LOCATED BY STATION AND OFFSET.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
7. ALL TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE FROM LEVEL LANDING AREA PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 65 OF 120

LOCATION 5

11554-TSIG.DWG Plotted on 13-Jul-2021 12:09 PM



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	FLASH
CHARLES RIVER DAM RD	NB	G,H	←G—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
CHARLES RIVER DAM RD	NB	J,K	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G↑	Y	R	G↑	Y	R	FY
CHARLES RIVER DAM RD	NB	L	—R→	—R→	—R→	—R→	—R→	—R→	—G→	—Y→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—R→	—G→	—Y→	—R→	—FY→
CHARLES RIVER DAM RD BIKES	NB	S,T	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
O'BRIEN HIGHWAY	SB	A,B	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←G—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
O'BRIEN HIGHWAY	SB	C,D	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
CHARLESTOWN AVE	WB	E	R	R	R	R	R	R	←G— G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
CHARLESTOWN AVE	WB	F	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
CHARLESTOWN AVE	WB	R	←R—	←R—	←R—	←R—	←R—	←R—	←G—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
LAND BOULEVARD	EB	M	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←G—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
LAND BOULEVARD	EB	N	R	R	R	R	R	R	R	R	R	R	R	R	←G— G	Y	R	R	R	R	R	R	R	FR
LAND BOULEVARD	EB	P,Q	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FR
O'BRIEN HIGHWAY	SB	V,W	R↗	R↗	R↗	G↗	Y↗	R↗	R↗	R↗	R↗	R↗	R↗	R↗	G↗	Y↗	R↗	R↗	R↗	R↗	R↗	R↗	R↗	FR↗
O'BRIEN HIGHWAY (BIKE)	SB	X	G	Y	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
PEDESTRIAN X-ING	NB-SB	P1-P2	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P3-P4	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P5-P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P7-P8	W/FDW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
TIMING IN SECONDS																								
MINIMUM GREEN (INITIAL)			6			10			8			6			8			10			5			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			2			2			2			2			2			2			
MAXIMUM 1			15			36			33			15			18			10			32			
MAXIMUM 2			22			36			36			22			28			10			36			
YELLOW CLEARANCE				4			4			4			4			4			4			4		
RED CLEARANCE					1			3			3			1			3			3			3	
PEDESTRIAN WALK			7			5			7									5						
PEDESTRIAN CLEARANCE			6			18			20									16						
DETECTOR MEMORY			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			
RECALL			OFF			OFF			OFF			OFF			OFF			OFF			OFF			

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES						
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø4	ø5	ø8	ø10	ø11
1/1/1 M-F 5:30AM-2PM	130	0	27	32	51	20	20	25	14
2/1/1 M-F 2PM-8PM	120	0	27	32	32	20	29	25	14
3/1/1 SAT/sun 11AM-6PM	120	0	27	32	32	20	29	25	14
MODE					COORD ø				

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. OL = OVERLAP
4. B = BICYCLE
5. ø1 AND ø5 SHALL NOT OPERATE CONCURRENTLY
6. MAXIMUM 1 = ALL OTHER TIMES
7. MAXIMUM 2 = DURING COORDINATION
8. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
9. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.

SEQUENCE & TIMING NOTES:
1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1	←←←←	Ø1&Ø11
D2	2	→→→→→	Ø2&Ø5
D3	3	↓↓↓↓	Ø4
D4	4	↑↑↑↑	Ø8

EMERGENCY VEHICLE PRE-EMPTION OPERATION
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

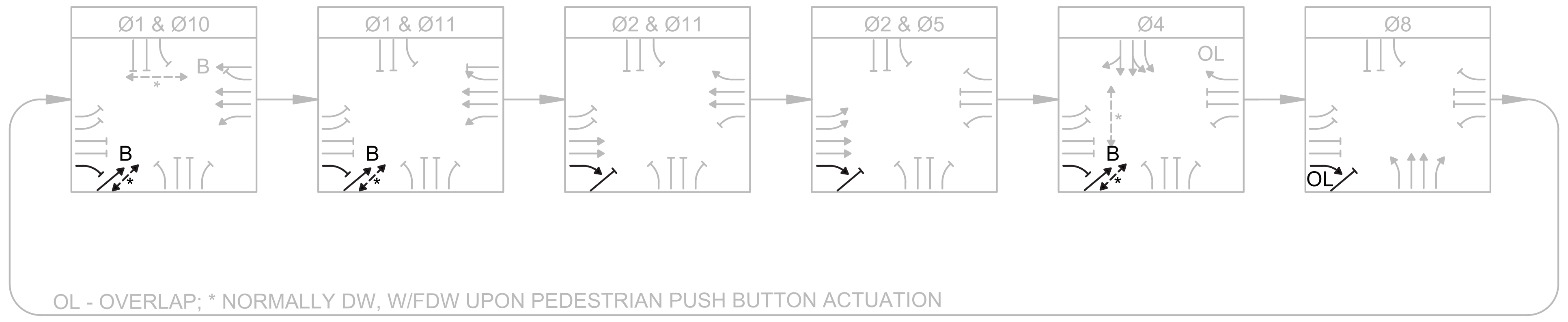
LIST OF MAJOR ITEMS REQUIRED

O'BRIEN HIGHWAY/CHARLES RIVER DAM ROAD AT LAND BOULEVARD/CHARLESTOWN AVENUE

PAY ITEM	QUANTITY	DESCRIPTION
816.05	1	PROP TS 2 TYPE 1 ATC CONTROLLER W/ADAPTIVE CONTROL IN EXISTING TYPE 6 CABINET
	1	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	2	TS POST 8' STANDARD INCL. FOUNDATION
	3	SIGNAL HEAD, 3-SECTION, 12" LENSES
	1	SIGNAL HEAD, 3-SECTION, 8" LENSES (W/BIKE DISPLAYS)
	1	SIGNAL HEAD, 4-SECTION, 12" LENSES
	2	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	2	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	1	VIDEO BIU
	1	ETHERNET OVER COPPER ACCESS DEVICE/SWITCH
	1	VIDEO DETECTION SYSTEM (2 CAMERAS. VDP & CABLES)
	4	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	2	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
804.3	80'±	3" CONDUIT, SCHEDULE 80, TYPE NM
811.31	5	PULL BOX-12"x12"

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

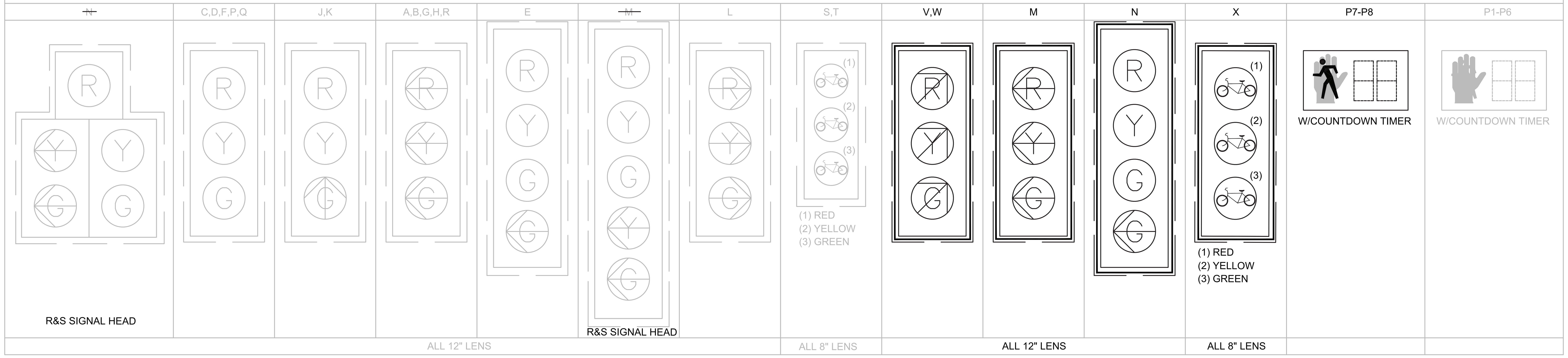
EXISTING/PROPOSED PREFERENTIAL PHASE SEQUENCE



OL - OVERLAP; * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

B=BICYCLE

EXISTING/PROPOSED SIGNAL HEAD DATA



NOTES:
1. ALL PROPOSED SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. PROPOSED SIGNAL HEAD "M" SHALL BE EQUIPPED WITH 5"± NON-LOUVERED BACKPLATES. ALL OTHER PROPOSED SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL PROPOSED SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.
4. ALL PROPOSED SIGNAL DISPLAYS SHALL BE EQUIPPED W/L.E.D. MODULES.

EXIST/PROP VIDEO DETECTOR DATA

DETECTOR NO.	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	LAND EB RIGHT-TURN LANE	V4	0	Ø3
2	LAND EB THRU LANES	V4	0	Ø3
3	LAND EB LEFT-TURN LANE	V4	0	Ø3
4	O'BRIEN SB THRU LANES	V1	0	Ø2
5	O'BRIEN SB LEFT-TURN LANES	V1	0	Ø5
6	CHARLESTOWN EB LANES	V2	0	Ø4
7	CHARLES RIVER DAM NB RIGHT-TURN LANE	V3	0	Ø11
8	CHARLES RIVER DAM NB THRU LANES	V3	0	Ø11
9	CHARLES RIVER DAM NB LEFT-TURN LANE	V3	0	Ø1
10	CHARLES RIVER DAM NB BIKE LANE	V3	0	Ø10
11	O'BRIEN SB RIGHT-TURN LANE	V5	0	Ø2
11	O'BRIEN SB BIKE LANE	V6	0	Ø1

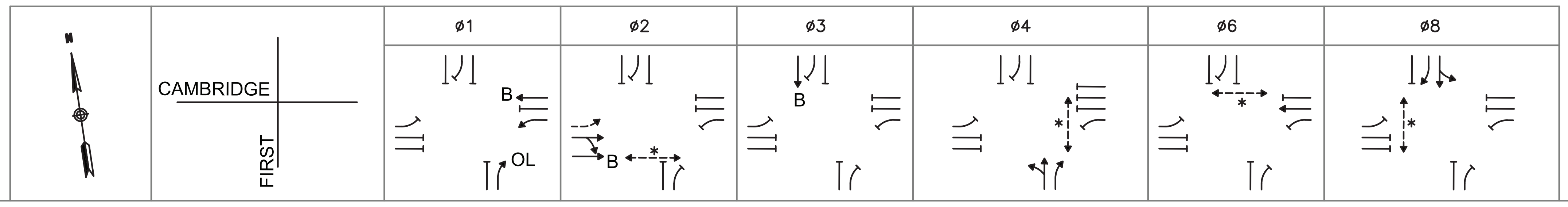
NOTE:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLANS, AND ADJUSTING/READJUSTING DETECTION ZONES IN THE PRESENCE OF THE ENGINEER.
3. DETECTION ZONES SHALL COUNT VOLUME AND OCCUPANCY.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 66 OF 120

LOCATIONS 3, 4 & 6

CONSTRUCTION NOTES

1. SEE SHEET 67 FOR TRAFFIC SIGNAL DATA.
2. SEE SHEET 51 FOR SIGNAGE AND STRIPING PLAN.
3. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
6. ALL TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE FROM LEVEL LANDING AREA PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.



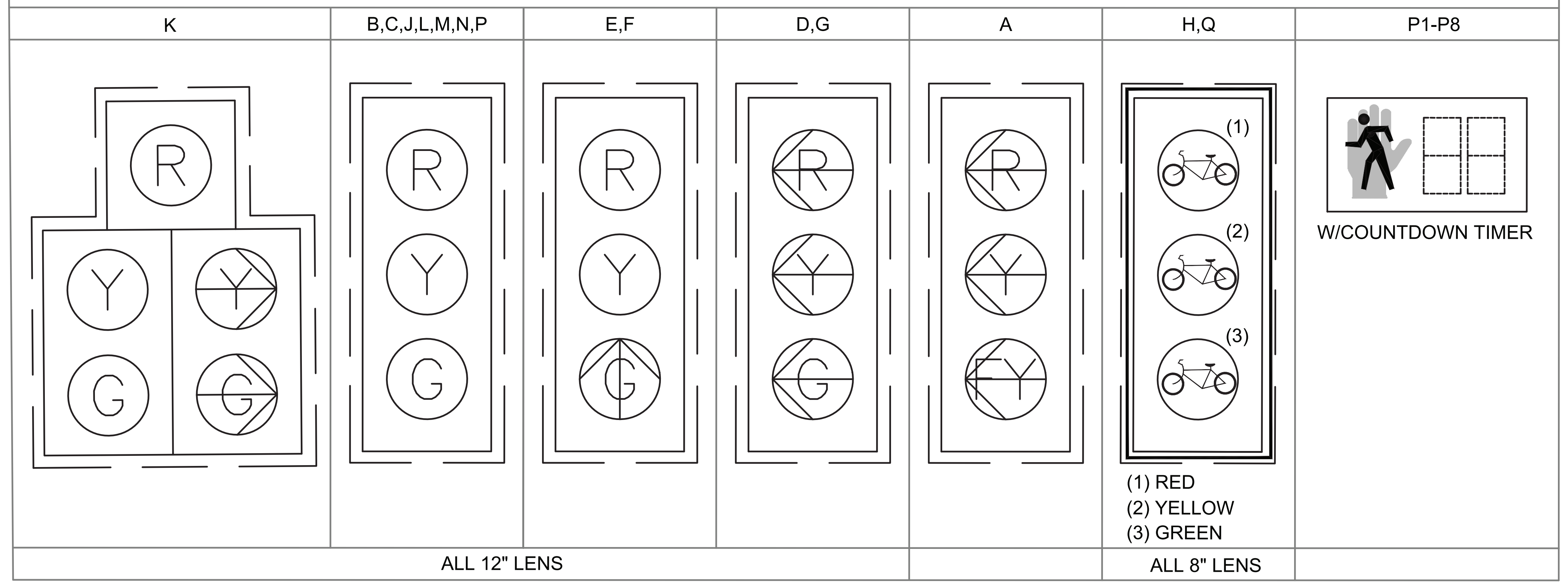
SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	FLASH
CAMBRIDGE ST	EB	A	←R–	←R–	←R–	←FY–	←Y–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←FR–
CAMBRIDGE ST	EB	B,C	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
CAMBRIDGE ST	WB	D,G	←G–	←Y–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←R–	←FR–
CAMBRIDGE ST	WB	E,F	R	R	R	R	R	R	R	R	R	R	R	R	R	↑G	Y	R	R	R	R	R	FY
CAMBRIDGE ST (BIKE)	WB	H	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
FIRST ST	NB	J,L	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	FR
FIRST ST	NB	K	R –G→	R –Y→	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	FR
NORTH FIRST ST	SB	M,N,P	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FR
NORTH FIRST ST (BIKE)	SB	Q	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	FR
PEDESTRIAN X-ING	EB-WB	P1-P2	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P3-P4	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W/FDW	DW	DW	DW	DW	DW	W	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB-WB	P5-P6	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P7-P8	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
TIMING IN SECONDS																							
MINIMUM GREEN (INITIAL)			6			10			5				6			10				6			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			2			2				2			2				2			
MAXIMUM 1			25			30			10				30			30				30			
MAXIMUM 2			30			35			10				35			35				35			
YELLOW CLEARANCE				3			3.5			4				3			3				3.5		
RED CLEARANCE					3			3			4				1.5			2				1.5	
PEDESTRIAN WALK						7						4	3			8			4	3			
PEDESTRIAN CLEARANCE						8							10			14				10			
BICYCLE CLEARANCE				3.5	6.5																		
DETECTOR MEMORY			NON-LOCK			NON-LOCK						NON-LOCK				NON-LOCK			NON-LOCK				
RECALL			OFF			MIN						OFF				MIN			OFF				

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES					
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø3	ø4	ø6	ø8
1/1/1 M-F 5:30AM-10AM	110	101	37	33	15	25	70	25
2/1/1 M-F 3PM-8PM	100	23	25	32	15	28	57	28
3/1/1 M-F 10AM-3PM, M-F 8PM-11PM, SAT/SUN 10AM-6PM	90	15	17	30	15	28	45	28
4/1/1 ALL OTHER TIMES	80	16	17	25	15	23	37	23
MODE			COORD ø (1/1/1)	COORD ø (2/1/1) COORD ø (3/1/1) COORD ø (4/1/1)			COORD ø (1/1/1)	

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION.
3. ** PEDESTRIAN RECALL SHALL BE SET FOR AA COORDINATION PATTERNS.
4. OL = OVERLAP
5. B = BICYCLE
6. ø4&ø8 DUAL ENTRY.
7. MAXIMUM 1 = ALL OTHER TIMES
8. MAXIMUM 2 = DURING COORDINATION
9. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
10. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
11. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SIGNAL HEAD DATA

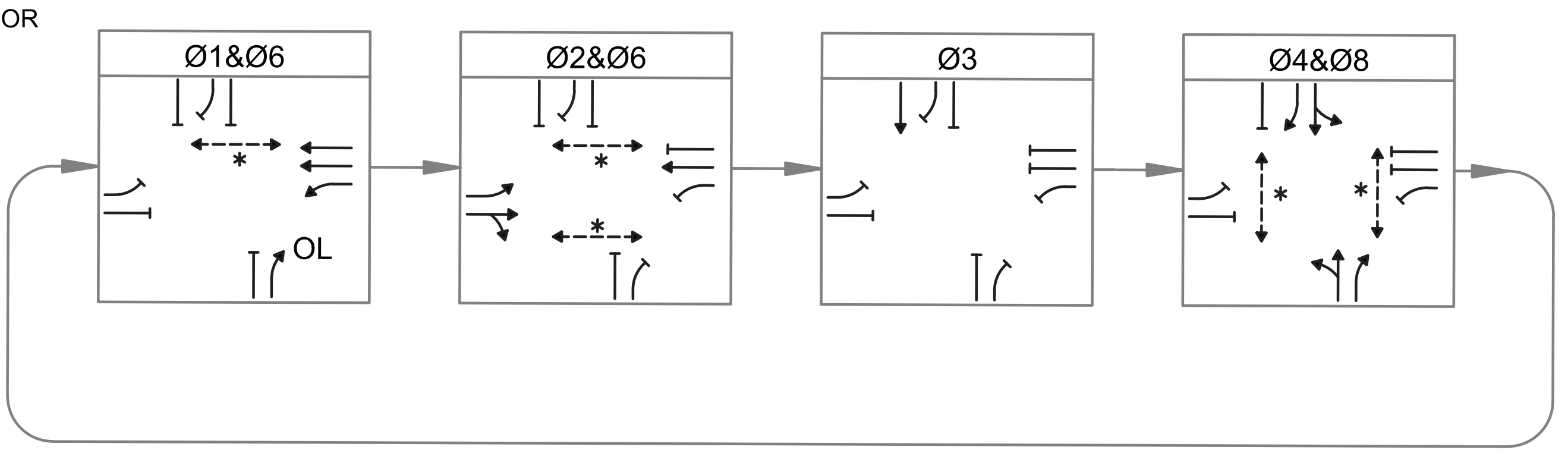


NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± LOUVERED BACKPLATES.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED W/L.E.D. MODULES.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

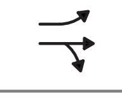
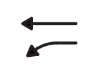
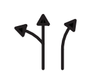
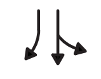
PREFERENTIAL PHASE SEQUENCE



OL - OVERLAP; * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

EMERGENCY VEHICLE PRE-EMPTION OPERATION
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø2
D2	2		Ø1&Ø6
D3	3		Ø4
D4	4		Ø8

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	CAMBRIDGE EB LEFT-TURN LANE	C1	0	Ø2
2	CAMBRIDGE EB THRU-RIGHT LANE	C1	0	Ø2
3	CAMBRIDGE EB BIKE ZONE	C1	0	Ø2
4	CAMBRIDGE WB LEFT-TURN LANE	C1	0	Ø1
5	CAMBRIDGE WB THRU-RIGHT LANE	C1	0	Ø6
6	CAMBRIDGE WB BIKE ZONE	C1	0	Ø6
7	N. FIRST SB LEFT-THRU LANE	C1	0	Ø8
8	N. FIRST SB RIGHT-TURN LANE	C1	0	Ø8
9	N. FIRST SB BIKE ZONE	C1	0	Ø3
10	FIRST NB LEFT-THRU LANE	C1	0	Ø4
11	FIRST NB BIKE LANE	C1	0	Ø4
12	FIRST NB RIGHT-TURN LANE	C1	0	Ø4
13	CAMBRIDGE EB TWO-STAGE TURN BOX	C1	0	Ø4
14	CAMBRIDGE WB TWO-STAGE TURN BOX	C1	0	Ø8
15	FIRST NB TWO-STAGE TURN BOX	C1	0	Ø6

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLAN, AND ADJUSTING/READJUSTING DETECTION ZONES IN THE PRESENCE OF THE ENGINEER.
3. DETECTION ZONES SHALL COUNT VOLUME AND OCCUPANCY.

LIST OF MAJOR ITEMS REQUIRED

CAMBRIDGE STREET AT FIRST STREET/NORTH FIRST STREET

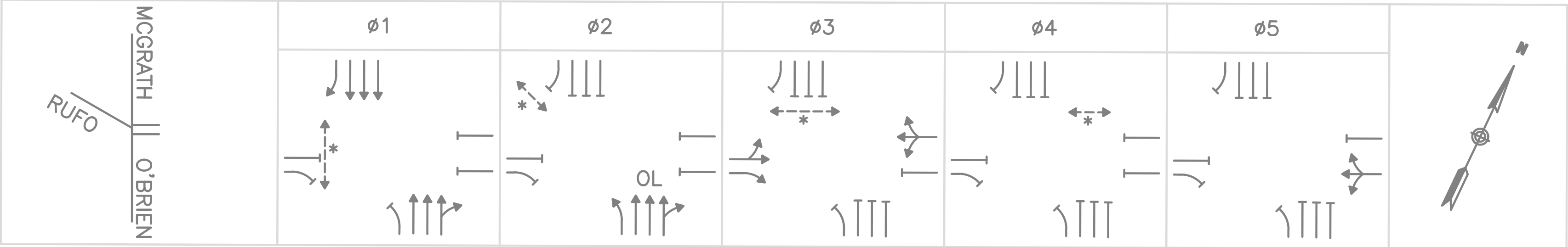
PAY ITEM	QUANTITY	DESCRIPTION
816.06	1	8Ø TS 2 TYPE 1 CONTROLLER (SIEMENS M60) IN A TYPE 5 (708) BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	GPS SYNCH DEVICE
	1	TS 20' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	3	TS 35' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	2	TS POST 8' STANDARD INCL. FOUNDATION
	2	TS POST 10' STANDARD INCL. FOUNDATION
	11	SIGNAL HEAD, 3-SECTION, 12" LENSES
	2	SIGNAL HEAD, 3-SECTION, 8" LENSES (W/BIKE DISPLAYS)
	1	SIGNAL HEAD, 3-SECTION, 12" LENSES (W/FLASHING YELLOW ARROW)
	1	SIGNAL HEAD, 5-SECTION, 12" LENSES
	8	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	4	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	4	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	SINGLE POINT VIDEO DETECTION SYSTEM (1 CAMERA. VDP & CABLES)
	4	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	1	FIELD MONITORING UNIT MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-500-085-02) WITH 10 YEAR SERVICE/DATA PLAN
	1	PRE-EMPTION INTERFACE CARD MANUFACTURED BY APPLIED INFORMATION INC. (MODEL AI-900-016)
804.3	560'±	3" CONDUIT, SCHEDULE 80, TYPE NM
811.31	8	PULL BOX-12"x12"

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

CAMBRIDGE
O'BRIEN HIGHWAY
TRAFFIC PLANS
SHEET 68 OF 120

LOCATION 7

Plotted on 13-Jul-2021 12:10 PM
11554-TSIG.DWG



SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASH
MCGRATH HWY	EB	A	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
MCGRATH HWY	EB	B	↑G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
MCGRATH HWY	EB	C	—G→	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
MCGRATH HWY	EB	J,K	—G→	—Y→	R	R	R	R	R	R	R	R	R	R	R	R	R	—FY→
O'BRIEN HWY	WB	D,E	←R—	←R—	←R—	←G—	←Y—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←R—	←FR—
O'BRIEN HWY	WB	F,G,H	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	R	FY
RUFO RD	NB	L,N,Q	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FR
RUFO RD	NB	M,P	R	R	R	R	R	R	—G→	Y	R	R	R	R	R	R	R	FR
SAV-MOR DRIVEWAY	SB	R,S	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FR
CAR WASH DRIVEWAY	SB	T,U	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FR
PEDESTRIAN X-ING	EB	P1-P2	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB	P3-P4	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB	P5-P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW		DW	DW	DW	DW	OUT
PEDESTRIAN X-ING	EB	P7-P8	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
TIMING IN SECONDS																		
MINIMUM GREEN (INITIAL)			6			6			6			–			4			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			3			3			2			–			2			
MAXIMUM 1			49			14			24			–			4			
MAXIMUM 2			49			14			24			–			4			
YELLOW CLEARANCE				4			4			4			4			4		
RED CLEARANCE					2			2			2			2			2	
PEDESTRIAN WALK			6			6			6			6			6			
PEDESTRIAN CLEARANCE			9			9			9			9			9			
DETECTOR MEMORY			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			
RECALL			OFF			OFF			OFF			–			OFF			

COORDINATION DATA**			COORDINATION PHASE SPLIT TIMES				
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø3	ø4	ø5
1/1/1 M-F 5:30AM-10AM	110	89	31	22	22	23	12
2/1/1 M-F 3PM-8PM	100***	84	22	22	22	22	12
3/1/1 M-F 10AM-3PM, M-F 8PM-11PM, SAT/SUN 10AM-6PM	90***	74	20	20	20	18	12
4/1/1 ALL OTHER TIMES	80****	47	20	16	16	16	12
MODE			COORD ø				

NOTES:

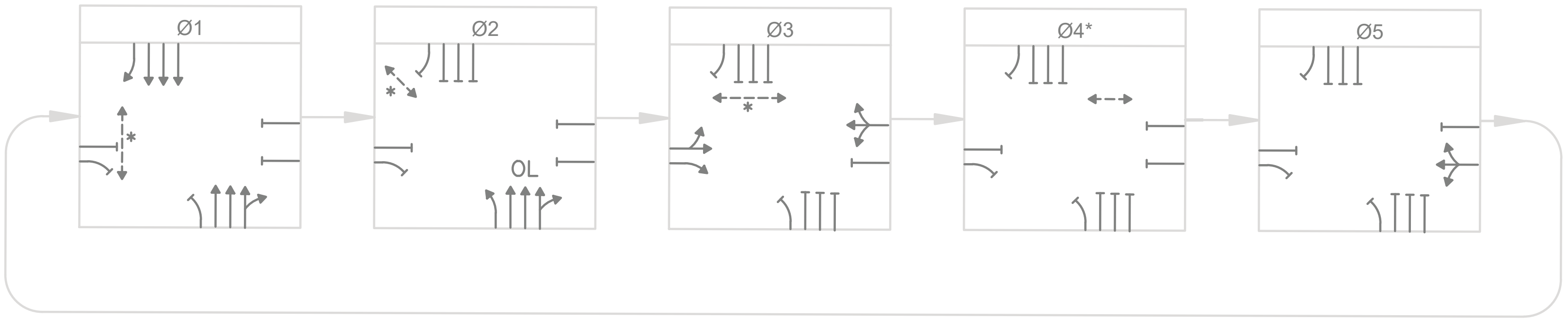
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. *** CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN MOVEMENT.
4. **** CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN MOVEMENT OR DRIVEWAY PHASE.
5. OL = OVERLAP
6. PERM = PERMISSIVE
7. MAXIMUM 1 = NORMAL OPERATION
8. MAXIMUM 2 = ~~SUN-FRI: 1200-2400 & SAT: ALL DAY~~
9. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
10. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION IS IN EFFECT.
11. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

PHASING & TIMINGS SHOWN ARE BASED ON A FIELD INVENTORY CONDUCTED ON APRIL 2020.

SEQUENCE & TIMING NOTES:

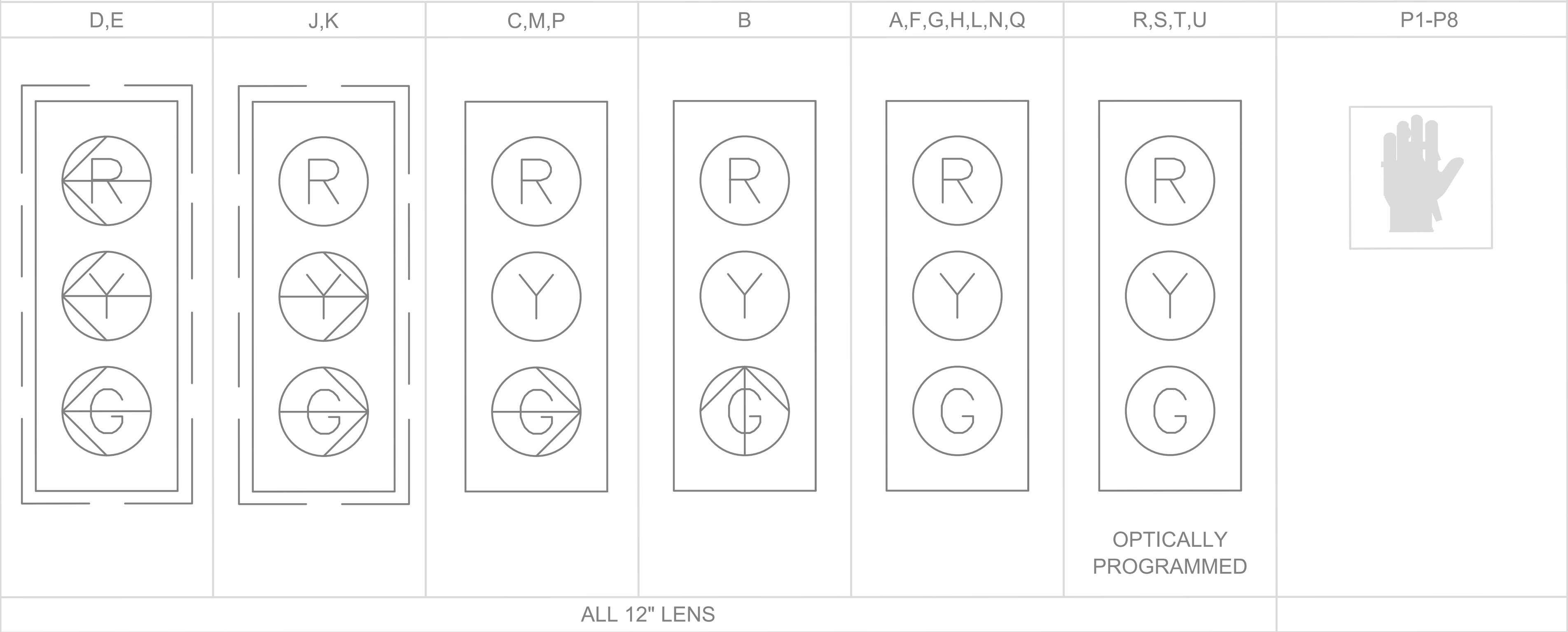
1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

EXISTING PREFERENTIAL PHASE SEQUENCE



* UPON PEDESTRIAN PUSH BUTTON ACTUATION

EXISTING SIGNAL HEAD DATA



LIST OF MAJOR ITEMS REQUIRED

MCGRATH HIGHWAY AT RUFO ROAD

PAY ITEM	QUANTITY	DESCRIPTION
816.07	1	MODIFY EXIST TS CONTROLLER (SIEMENS M60) TO PROPOSED TIMINGS SHOWN
	1	GPS SYNCH DEVICE

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

CAMBRIDGE
O'BRIEN HIGHWAY
COORDINATION DATA
SHEET 69 OF 120

Plotted on 13-Jul-2021 12:10 PM

11554-TSD.DWG

COORDINATION DATA

LOCATION 1: O'BRIEN HIGHWAY AT THIRD STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	92	90	81	73	-
SPLIT Ø2	45	31	30	32	16
SPLIT Ø4 (PED)	41	42	36	31*	0(35)
SPLIT Ø6	45	31	30	32	16(21)
SPLIT Ø7	11	11	11	11	11
SPLIT Ø8	30	34	25	20	14
SPLIT Ø9	24	24	24	17*	0(24)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA

LOCATION 2: O'BRIEN HIGHWAY AT WATER STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	80	88	86	0	-
SPLIT Ø2	70	66	56	52	17
SPLIT Ø4	40	34	34	28*	13(33)
SPLIT Ø5	35	15	15	15	13
SPLIT Ø6	35	51	41	37	16(23)
SPLIT Ø7	40	34	34	28	22
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA

LOCATION 3: O'BRIEN HIGHWAY AT N. FIRST STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	0	0	0	0	-
SPLIT Ø2	45	40	33	30	17(29)
SPLIT Ø3	25	23	20	20	12
SPLIT Ø4	40	37	37	30*	14(35)
SPLIT Ø6	45	40	33	30	17(29)
SPLIT Ø8	40	37	37	30*	14(37)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA GENERAL NOTES

1. ALL ENTRIES IN SECONDS.
2. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
3. ( ) = SPLIT TIMES WITH PEDESTRIAN PHASE ACTUATED.
4. COORDINATED PHASE SHALL BE "CALL NOT ACTUATED" DURING COORDINATION.
5. * CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN PHASE.

COORDINATION DATA

LOCATION 4: O'BRIEN HIGHWAY AT EAST/CAMBRIDGE STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	10	74	75	70	-
SPLIT Ø1	35	45	35	28	19(23)
SPLIT Ø2	50	30	33	32	16(21)
SPLIT Ø4	25	25	22	20*	13(22)
COORDINATED PHASE	Ø2	Ø1	Ø1	Ø1	

COORDINATION DATA

LOCATION 6: CAMBRIDGE STREET AT N. FIRST/FIRST STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	101	23	15	16	-
SPLIT Ø1	37	25	17	17	13
SPLIT Ø2	33	32	30	25	18(25)
SPLIT Ø3 (BIKE)	15	15	15	15	15
SPLIT Ø4	25	28	28	23	12(23)
SPLIT Ø6	70	57	45	37	17(28)
SPLIT Ø8	25	28	28	23	12(23)
COORDINATED PHASE	Ø1&Ø6	Ø2	Ø2	Ø2	

COORDINATION DATA

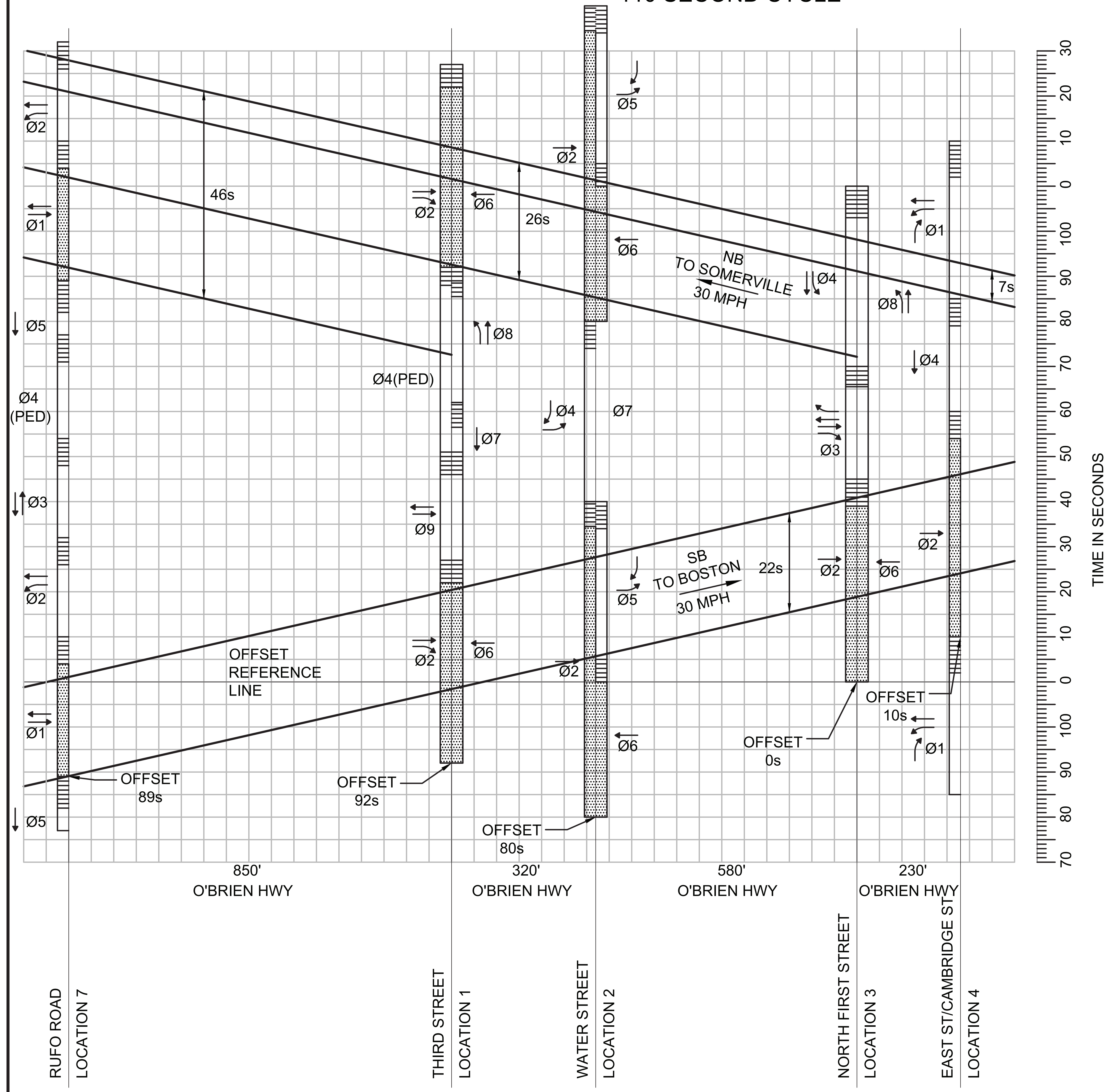
LOCATION 7: O'BRIEN HIGHWAY AT RUFO ROAD

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	89	84	74	47	-
SPLIT Ø1	31	22	20*	20*	13(22)
SPLIT Ø2	22	22	20*	16*	12(22)
SPLIT Ø3	22	22	20*	16*	13(22)
SPLIT Ø4	23	22*	18*	16*	-(23)
SPLIT Ø5	12	12	12	12	12
COORDINATED PHASE	Ø1	Ø1	Ø1	Ø1	

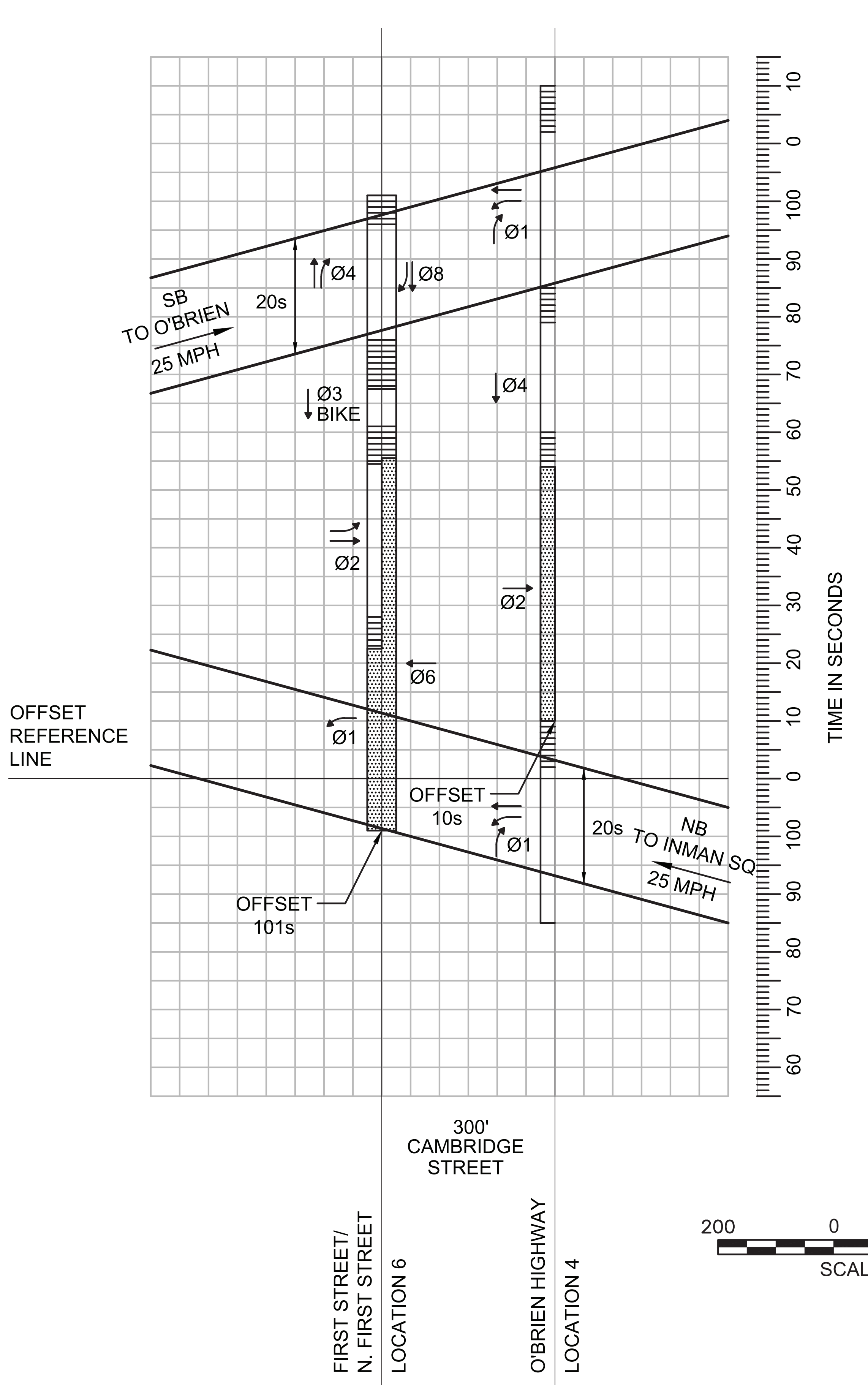
CONTROLLER COORDINATION SETUP

SET-UP	CODE						0	1	2	3
OPERATION	1	1	1	1	1	1	FREE	AUTO	MANUAL	---
MODE (NORMAL)	1	1	0	1	0	0	PERM	YIELD	PM YLD	PM OMT
MAXIMUM	2	0	0	0	0	0	M INH	MAX 1	MAX 2	---
CORRECTION	2	2	2	2	2	2	DWELL	MX DW	SH WAY	SW+
OFFSET	0	0	0	0	0	0	BEGIN	END	---	---
FORCE	0	0	0	0	0	0	PLAN	CYCLE	---	---
LOCATION	1	2	3	4	6	7				

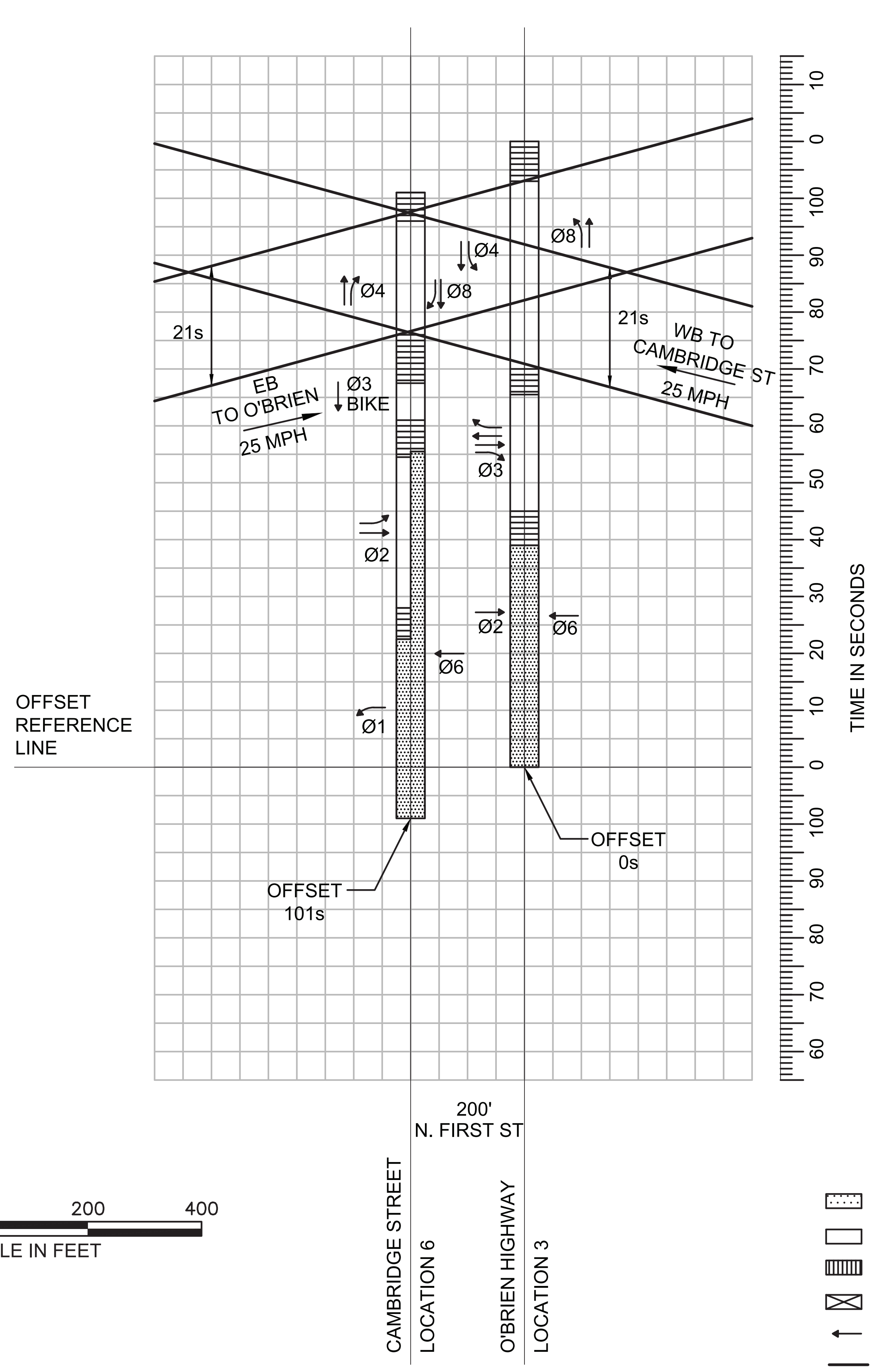
PLAN 1 - WEEKDAY MORNING
110 SECOND CYCLE



PLAN 1 - WEEKDAY MORNING
110 SECOND CYCLE



PLAN 1 - WEEKDAY MORNING
110 SECOND CYCLE



DAILY & WEEKLY COORDINATION PROGRAM

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 110" CYCLE	0530-1000	-	-
PLAN 2 100" CYCLE	1500-2000	-	-
PLAN 3 90" CYCLE	1000-1500 2000-2300	1000-1800	1000-1800
PLAN 4 80" CYCLE	0000-0530 2300-2400	0000-1000 1800-2400	0000-1000 1800-2400
FREE OPERATION	-	-	-
FLASH OPERATION	-	-	-

LEGEND

░	COORDINATED PHASE GREEN TIME
▭	NON-COORDINATED VEHICLE PHASE GREEN TIME
▥	CLEARANCE TIME (YELLOW + RED)
☒	EXCLUSIVE PEDESTRIAN PHASE
←	PHASE MOVEMENT
—	INTERSECTION-INTERSECTION COORDINATION BAND

CAMBRIDGE
O'BRIEN HIGHWAY
COORDINATION DATA
SHEET 70 OF 120

COORDINATION DATA
LOCATION 1: O'BRIEN HIGHWAY AT THIRD STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	92	90	81	73	-
SPLIT Ø2	45	31	30	32	16
SPLIT Ø4 (PED)	41	42	36	31*	0(35)
SPLIT Ø6	45	31	30	32	16(21)
SPLIT Ø7	11	11	11	11	11
SPLIT Ø8	30	34	25	20	14
SPLIT Ø9	24	24	24	17*	0(24)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA
LOCATION 2: O'BRIEN HIGHWAY AT WATER STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	80	88	86	0	-
SPLIT Ø2	70	66	56	52	17
SPLIT Ø4	40	34	34	28*	13(33)
SPLIT Ø5	35	15	15	15	13
SPLIT Ø6	35	51	41	37	16(23)
SPLIT Ø7	40	34	34	28	22
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA
LOCATION 3: O'BRIEN HIGHWAY AT N. FIRST STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	0	0	0	0	-
SPLIT Ø2	45	40	33	30	17(29)
SPLIT Ø3	25	23	20	20	12
SPLIT Ø4	40	37	37	30*	14(35)
SPLIT Ø6	45	40	33	30	17(29)
SPLIT Ø8	40	37	37	30*	14(37)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA GENERAL NOTES
1. ALL ENTRIES IN SECONDS.
2. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
3. ( ) = SPLIT TIMES WITH PEDESTRIAN PHASE ACTUATED.
4. COORDINATED PHASE SHALL BE "CALL NOT ACTUATED" DURING COORDINATION.
5. * CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN PHASE.

COORDINATION DATA
LOCATION 4: O'BRIEN HIGHWAY AT EAST/CAMBRIDGE STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	10	74	75	70	-
SPLIT Ø1	35	45	35	28	19(23)
SPLIT Ø2	50	30	33	32	16(21)
SPLIT Ø4	25	25	22	20*	13(22)
COORDINATED PHASE	Ø2	Ø1	Ø1	Ø1	

COORDINATION DATA
LOCATION 6: CAMBRIDGE STREET AT N. FIRST/FIRST STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	101	23	15	16	-
SPLIT Ø1	37	25	17	17	13
SPLIT Ø2	33	32	30	25	18(25)
SPLIT Ø3 (BIKE)	15	15	15	15	15
SPLIT Ø4	25	28	28	23	12(23)
SPLIT Ø6	70	57	45	37	17(28)
SPLIT Ø8	25	28	28	23	12(23)
COORDINATED PHASE	Ø1&Ø6	Ø2	Ø2	Ø2	

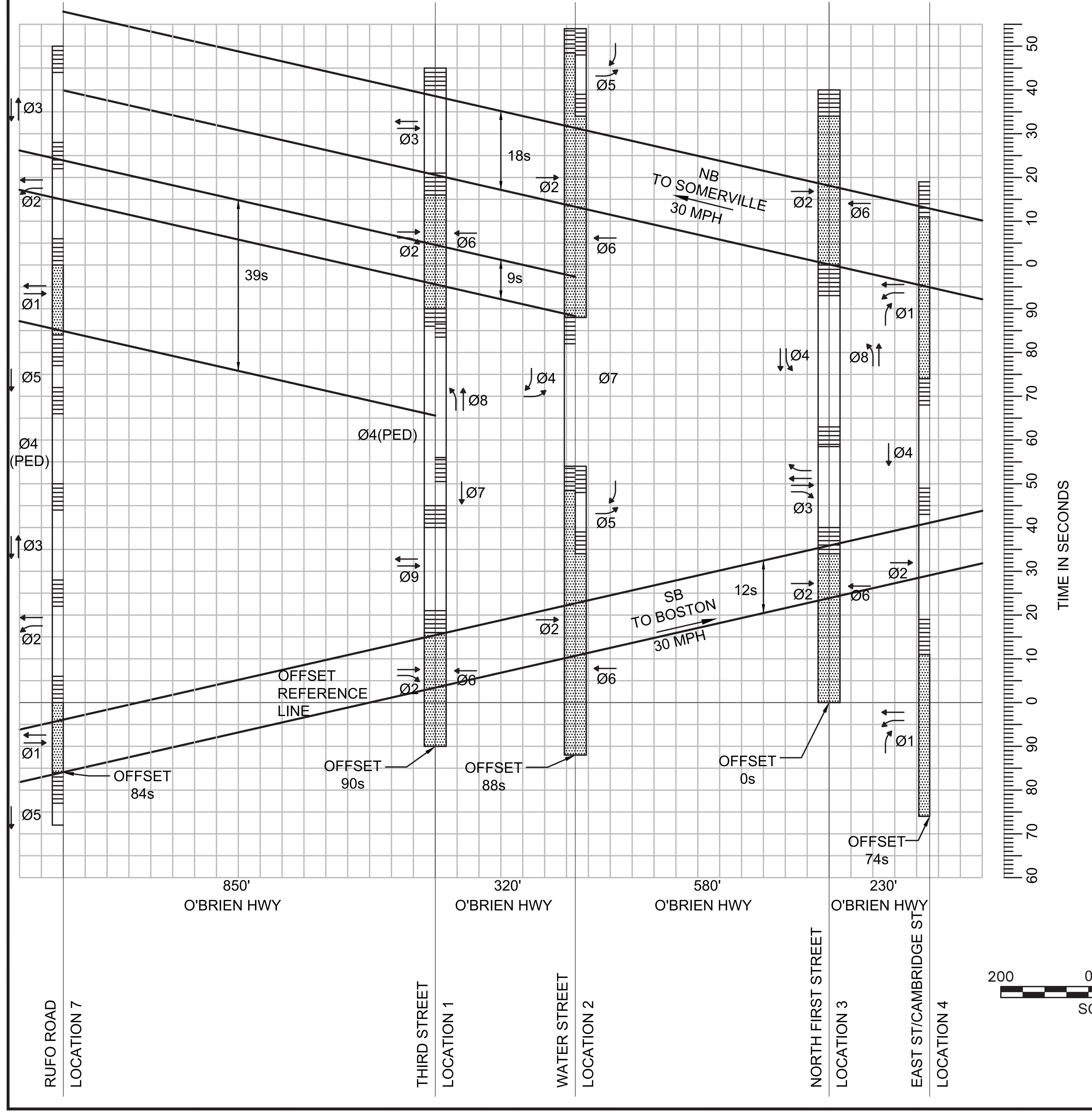
COORDINATION DATA
LOCATION 7: O'BRIEN HIGHWAY AT RUFO ROAD

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	89	84	74	47	-
SPLIT Ø1	31	22	20*	20*	13(22)
SPLIT Ø2	22	22	20*	16*	12(22)
SPLIT Ø3	22	22	20*	16*	13(22)
SPLIT Ø4	23	22*	18*	16*	-(23)
SPLIT Ø5	12	12	12	12	12
COORDINATED PHASE	Ø1	Ø1	Ø1	Ø1	

CONTROLLER COORDINATION SETUP

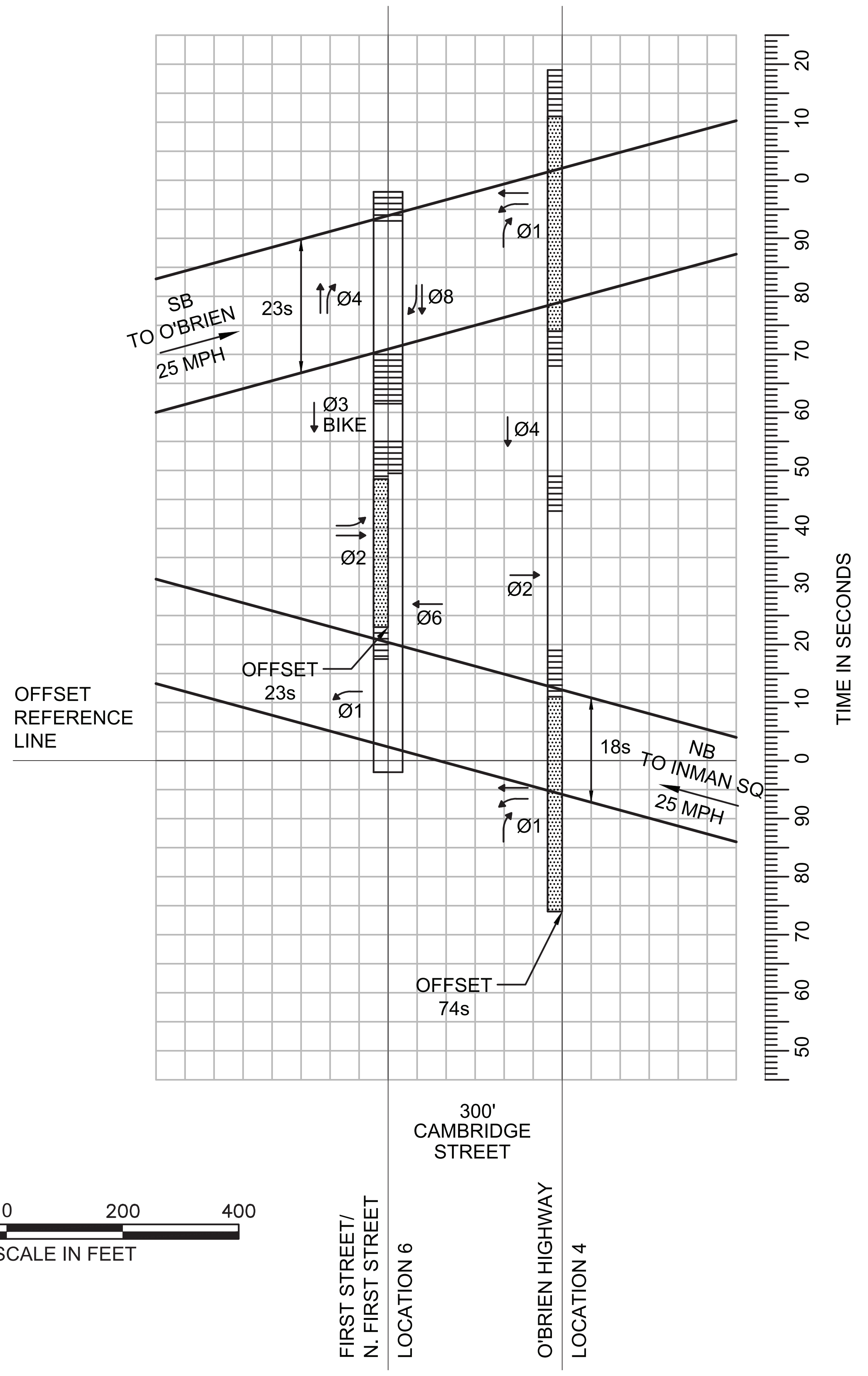
SET-UP	CODE						0	1	2	3
OPERATION	1	1	1	1	1	1	FREE	AUTO	MANUAL	---
MODE (NORMAL)	1	1	0	1	0	0	PERM	YIELD	PM YLD	PM OMT
MAXIMUM	2	0	0	0	0	0	M INH	MAX 1	MAX 2	---
CORRECTION	2	2	2	2	2	2	DWELL	MX DW	SH WAY	SW+
OFFSET	0	0	0	0	0	0	BEGIN	END	---	---
FORCE	0	0	0	0	0	0	PLAN	CYCLE	---	---
LOCATION	1	2	3	4	6	7				

PLAN 2 - WEEKDAY EVENING
100 SECOND CYCLE

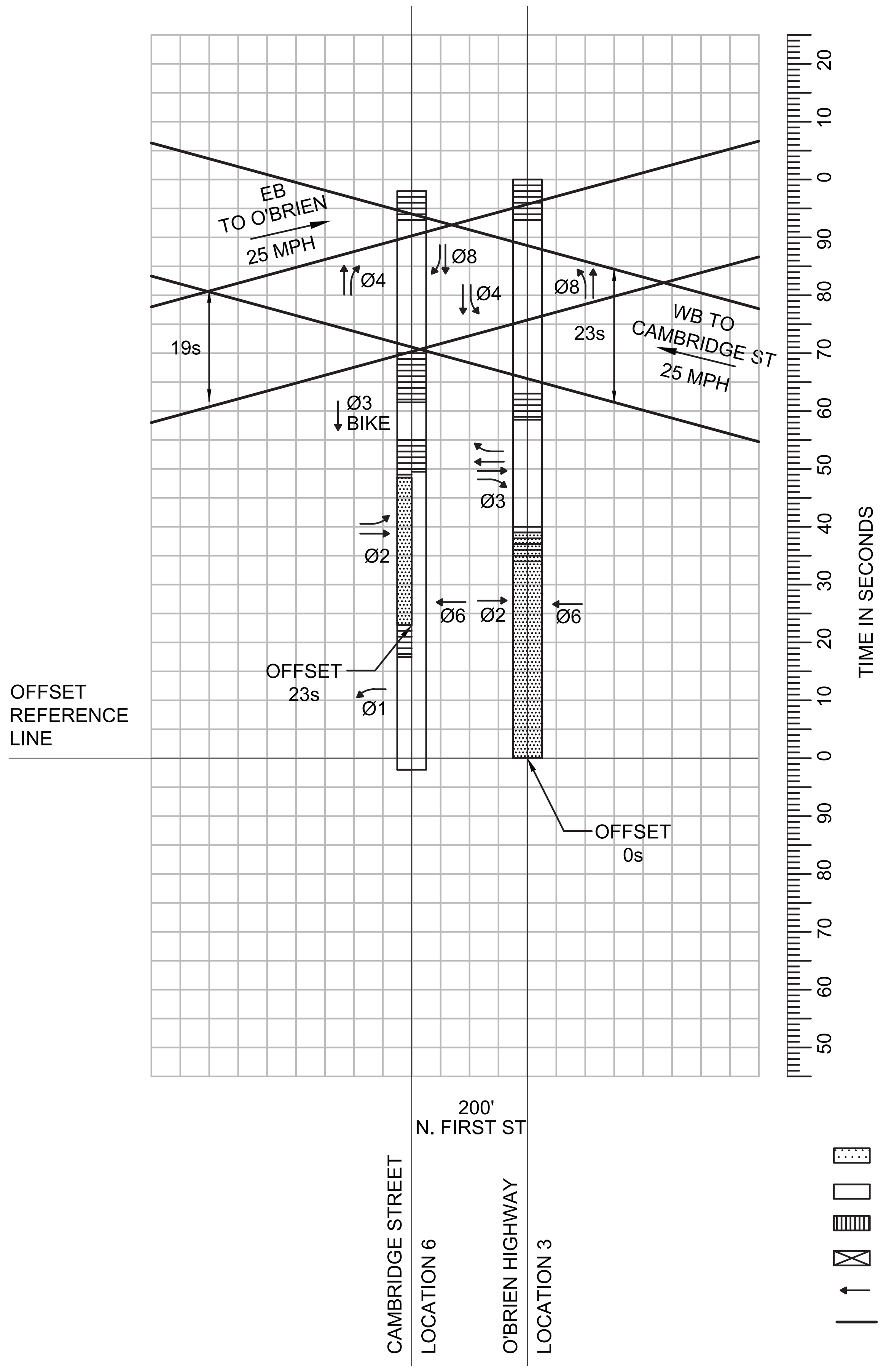


200 0 200 400
SCALE IN FEET

PLAN 2 - WEEKDAY EVENING
100 SECOND CYCLE



PLAN 2 - WEEKDAY EVENING
100 SECOND CYCLE



DAILY & WEEKLY COORDINATION PROGRAM

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 110" CYCLE	0530-1000	-	-
PLAN 2 100" CYCLE	1500-2000	-	-
PLAN 3 90" CYCLE	1000-1500 2000-2300	1000-1800	1000-1800
PLAN 4 80" CYCLE	0000-0530 2300-2400	0000-1000 1800-2400	0000-1000 1800-2400
FREE OPERATION	-	-	-
FLASH OPERATION	-	-	-

LEGEND

░	COORDINATED PHASE GREEN TIME
☐	NON-COORDINATED VEHICLE PHASE GREEN TIME
▥	CLEARANCE TIME (YELLOW + RED)
☒	EXCLUSIVE PEDESTRIAN PHASE
←	PHASE MOVEMENT
—	INTERSECTION-INTERSECTION COORDINATION BAND

CAMBRIDGE
O'BRIEN HIGHWAY
COORDINATION DATA
SHEET 71 OF 120

COORDINATION DATA
LOCATION 1: O'BRIEN HIGHWAY AT THIRD STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	92	90	81	73	-
SPLIT Ø2	45	31	30	32	16
SPLIT Ø4 (PED)	41	42	36	31*	0(35)
SPLIT Ø6	45	31	30	32	16(21)
SPLIT Ø7	11	11	11	11	11
SPLIT Ø8	30	34	25	20	14
SPLIT Ø9	24	24	24	17*	0(24)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA
LOCATION 2: O'BRIEN HIGHWAY AT WATER STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	80	88	86	0	-
SPLIT Ø2	70	66	56	52	17
SPLIT Ø4	40	34	34	28*	13(33)
SPLIT Ø5	35	15	15	15	13
SPLIT Ø6	35	51	41	37	16(23)
SPLIT Ø7	40	34	34	28	22
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA
LOCATION 3: O'BRIEN HIGHWAY AT N. FIRST STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	0	0	0	0	-
SPLIT Ø2	45	40	33	30	17(29)
SPLIT Ø3	25	23	20	20	12
SPLIT Ø4	40	37	37	30*	14(35)
SPLIT Ø6	45	40	33	30	17(29)
SPLIT Ø8	40	37	37	30*	14(37)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA GENERAL NOTES
1. ALL ENTRIES IN SECONDS.
2. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
3. ( ) = SPLIT TIMES WITH PEDESTRIAN PHASE ACTUATED.
4. COORDINATED PHASE SHALL BE "CALL NOT ACTUATED" DURING COORDINATION.
5. * CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN PHASE.

COORDINATION DATA
LOCATION 4: O'BRIEN HIGHWAY AT EAST/CAMBRIDGE STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	10	74	75	70	-
SPLIT Ø1	35	45	35	28	19(23)
SPLIT Ø2	50	30	33	32	16(21)
SPLIT Ø4	25	25	22	20*	13(22)
COORDINATED PHASE	Ø2	Ø1	Ø1	Ø1	

COORDINATION DATA
LOCATION 6: CAMBRIDGE STREET AT N. FIRST/FIRST STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	101	23	15	16	-
SPLIT Ø1	37	25	17	17	13
SPLIT Ø2	33	32	30	25	18(25)
SPLIT Ø3 (BIKE)	15	15	15	15	15
SPLIT Ø4	25	28	28	23	12(23)
SPLIT Ø6	70	57	45	37	17(28)
SPLIT Ø8	25	28	28	23	12(23)
COORDINATED PHASE	Ø1&Ø6	Ø2	Ø2	Ø2	

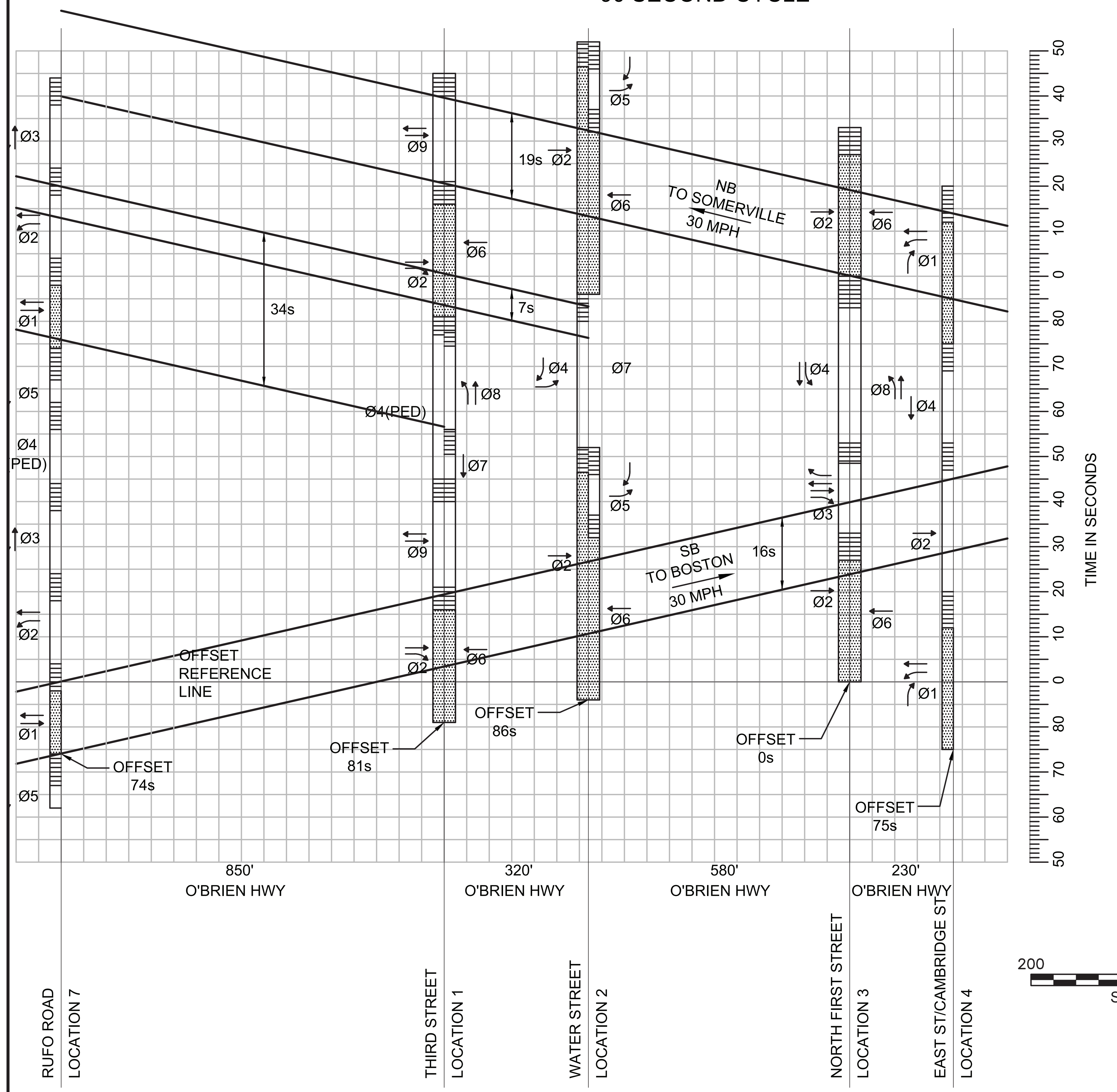
COORDINATION DATA
LOCATION 7: O'BRIEN HIGHWAY AT RUFO ROAD

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	89	84	74	47	-
SPLIT Ø1	31	22	20*	20*	13(22)
SPLIT Ø2	22	22	20*	16*	12(22)
SPLIT Ø3	22	22	20*	16*	13(22)
SPLIT Ø4	23	22*	18*	16*	-(23)
SPLIT Ø5	12	12	12	12	12
COORDINATED PHASE	Ø1	Ø1	Ø1	Ø1	

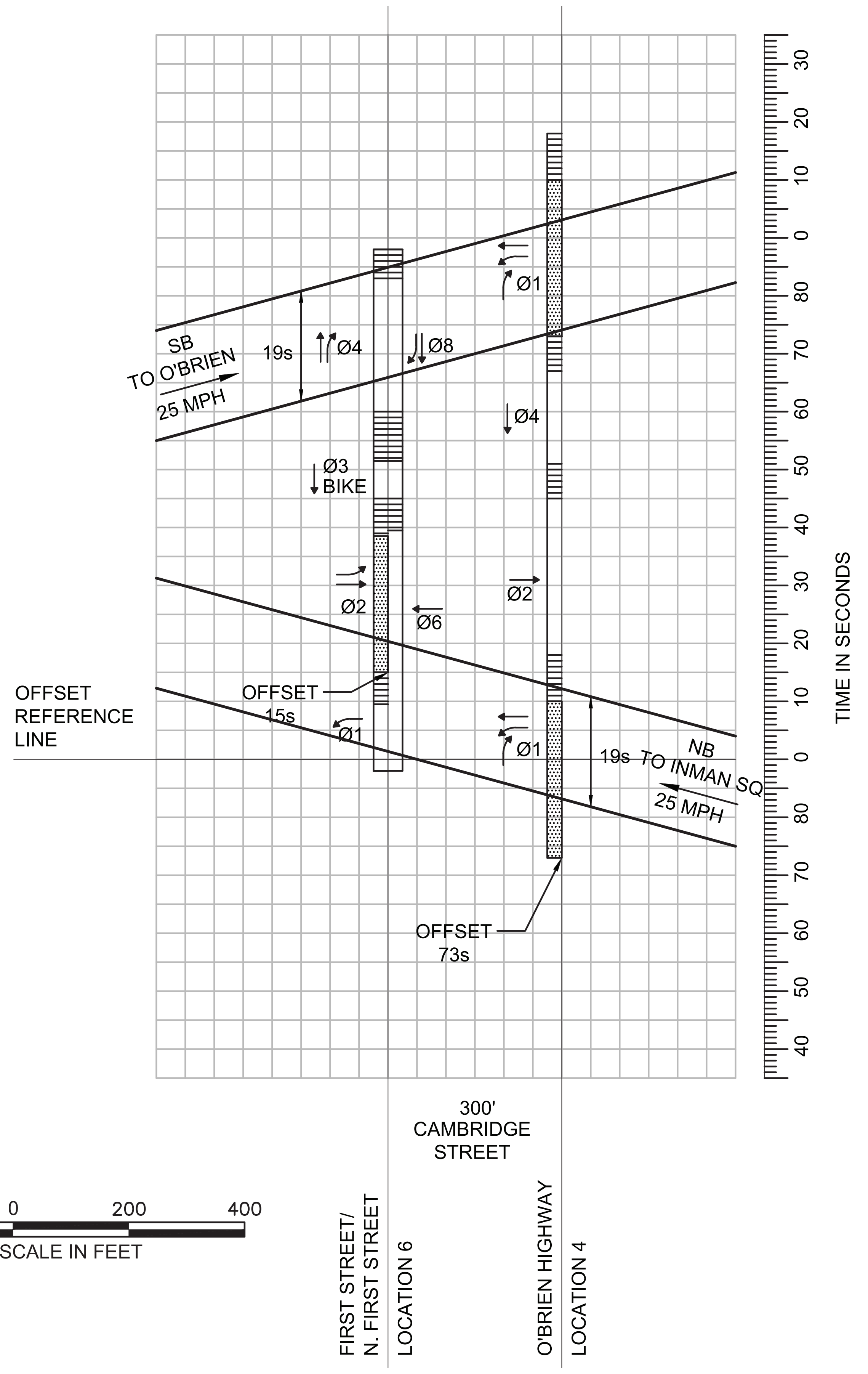
CONTROLLER COORDINATION SETUP

SET-UP	CODE						0	1	2	3
OPERATION	1	1	1	1	1	1	FREE	AUTO	MANUAL	---
MODE (NORMAL)	1	1	0	1	0	0	PERM	YIELD	PM YLD	PM OMT
MAXIMUM	2	0	0	0	0	0	M INH	MAX 1	MAX 2	---
CORRECTION	2	2	2	2	2	2	DWELL	MX DW	SH WAY	SW+
OFFSET	0	0	0	0	0	0	BEGIN	END	---	---
FORCE	0	0	0	0	0	0	PLAN	CYCLE	---	---
LOCATION	1	2	3	4	6	7				

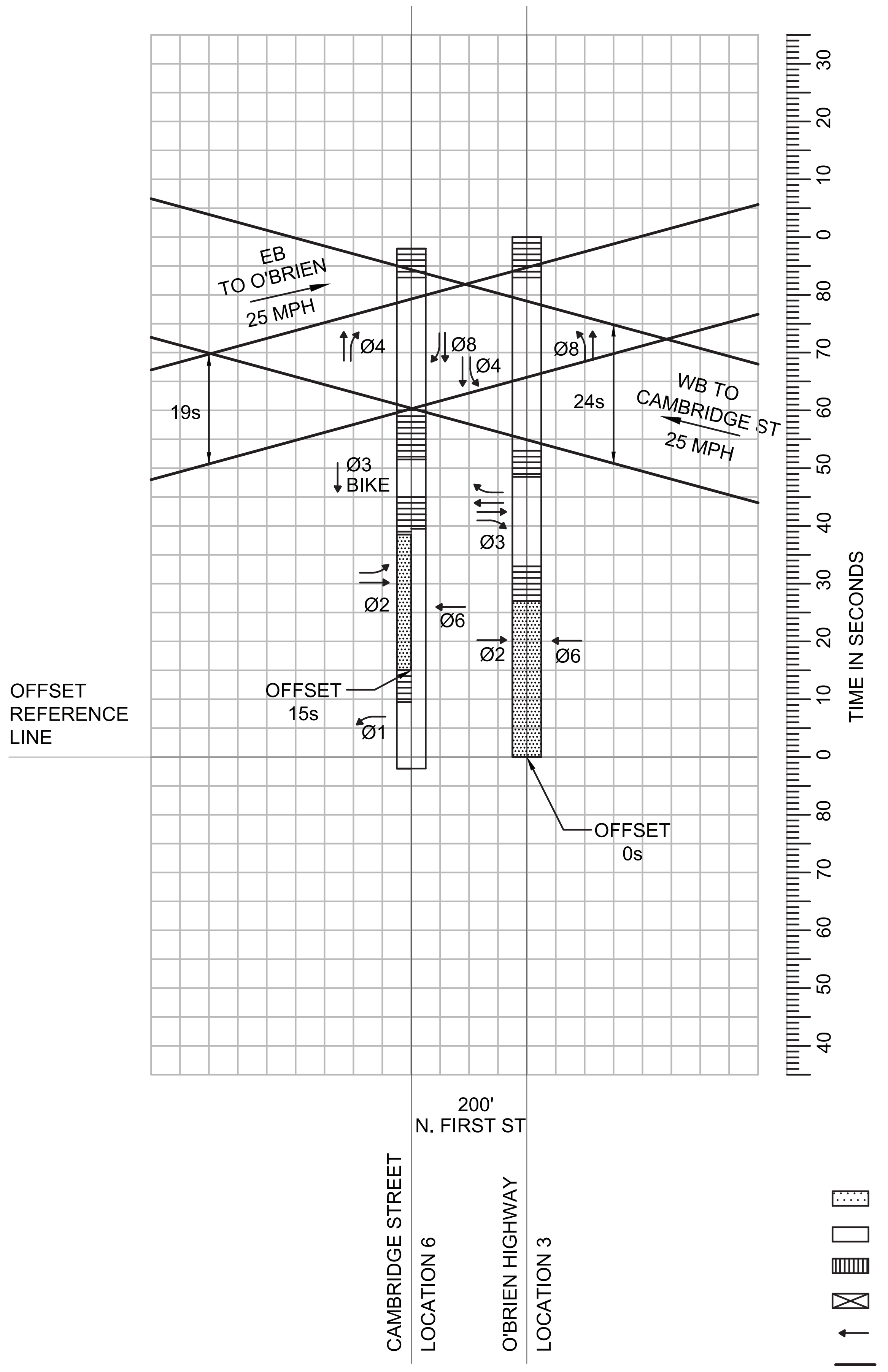
PLAN 3 - WEEKDAY MIDDAY/WEEKEND
90 SECOND CYCLE



PLAN 3 - WEEKDAY MIDDAY/WEEKEND
90 SECOND CYCLE



PLAN 3 - WEEKDAY MIDDAY/WEEKEND
90 SECOND CYCLE



DAILY & WEEKLY COORDINATION PROGRAM

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 110" CYCLE	0530-1000	-	-
PLAN 2 100" CYCLE	1500-2000	-	-
PLAN 3 90" CYCLE	1000-1500 2000-2300	1000-1800	1000-1800
PLAN 4 80" CYCLE	0000-0530 2300-2400	0000-1000 1800-2400	0000-1000 1800-2400
FREE OPERATION	-	-	-
FLASH OPERATION	-	-	-

LEGEND

░	COORDINATED PHASE GREEN TIME
☐	NON-COORDINATED VEHICLE PHASE GREEN TIME
▥	CLEARANCE TIME (YELLOW + RED)
☒	EXCLUSIVE PEDESTRIAN PHASE
←	PHASE MOVEMENT
—	INTERSECTION-INTERSECTION COORDINATION BAND

Plotted on 13-Jul-2021 12:10 PM
11554-TSD.DWG

CAMBRIDGE
O'BRIEN HIGHWAY
COORDINATION DATA
SHEET 72 OF 120

COORDINATION DATA

LOCATION 1: O'BRIEN HIGHWAY AT THIRD STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	92	90	81	73	-
SPLIT Ø2	45	31	30	32	16
SPLIT Ø4 (PED)	41	42	36	31*	0(35)
SPLIT Ø6	45	31	30	32	16(21)
SPLIT Ø7	11	11	11	11	11
SPLIT Ø8	30	34	25	20	14
SPLIT Ø9	24	24	24	17*	0(24)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA

LOCATION 2: O'BRIEN HIGHWAY AT WATER STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	80	88	86	0	-
SPLIT Ø2	70	66	56	52	17
SPLIT Ø4	40	34	34	28*	13(33)
SPLIT Ø5	35	15	15	15	13
SPLIT Ø6	35	51	41	37	16(23)
SPLIT Ø7	40	34	34	28	22
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA

LOCATION 3: O'BRIEN HIGHWAY AT N. FIRST STREET

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	0	0	0	0	-
SPLIT Ø2	45	40	33	30	17(29)
SPLIT Ø3	25	23	20	20	12
SPLIT Ø4	40	37	37	30*	14(35)
SPLIT Ø6	45	40	33	30	17(29)
SPLIT Ø8	40	37	37	30*	14(37)
COORDINATED PHASE	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	Ø2&Ø6	

COORDINATION DATA GENERAL NOTES

1. ALL ENTRIES IN SECONDS.
2. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
3. ( ) = SPLIT TIMES WITH PEDESTRIAN PHASE ACTUATED.
4. COORDINATED PHASE SHALL BE "CALL NOT ACTUATED" DURING COORDINATION.
5. * CONTROLLER SHALL DROP OUT OF COORDINATION TO SERVICE PEDESTRIAN PHASE.

COORDINATION DATA

LOCATION 4: O'BRIEN HIGHWAY AT EAST/CAMBRIDGE STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	10	74	75	70	-
SPLIT Ø1	35	45	35	28	19(23)
SPLIT Ø2	50	30	33	32	16(21)
SPLIT Ø4	25	25	22	20*	13(22)
COORDINATED PHASE	Ø2	Ø1	Ø1	Ø1	

COORDINATION DATA

LOCATION 6: CAMBRIDGE STREET AT N. FIRST/FIRST STREETS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	101	23	15	16	-
SPLIT Ø1	37	25	17	17	13
SPLIT Ø2	33	32	30	25	18(25)
SPLIT Ø3 (BIKE)	15	15	15	15	15
SPLIT Ø4	25	28	28	23	12(23)
SPLIT Ø6	70	57	45	37	17(28)
SPLIT Ø8	25	28	28	23	12(23)
COORDINATED PHASE	Ø1&Ø6	Ø2	Ø2	Ø2	

COORDINATION DATA

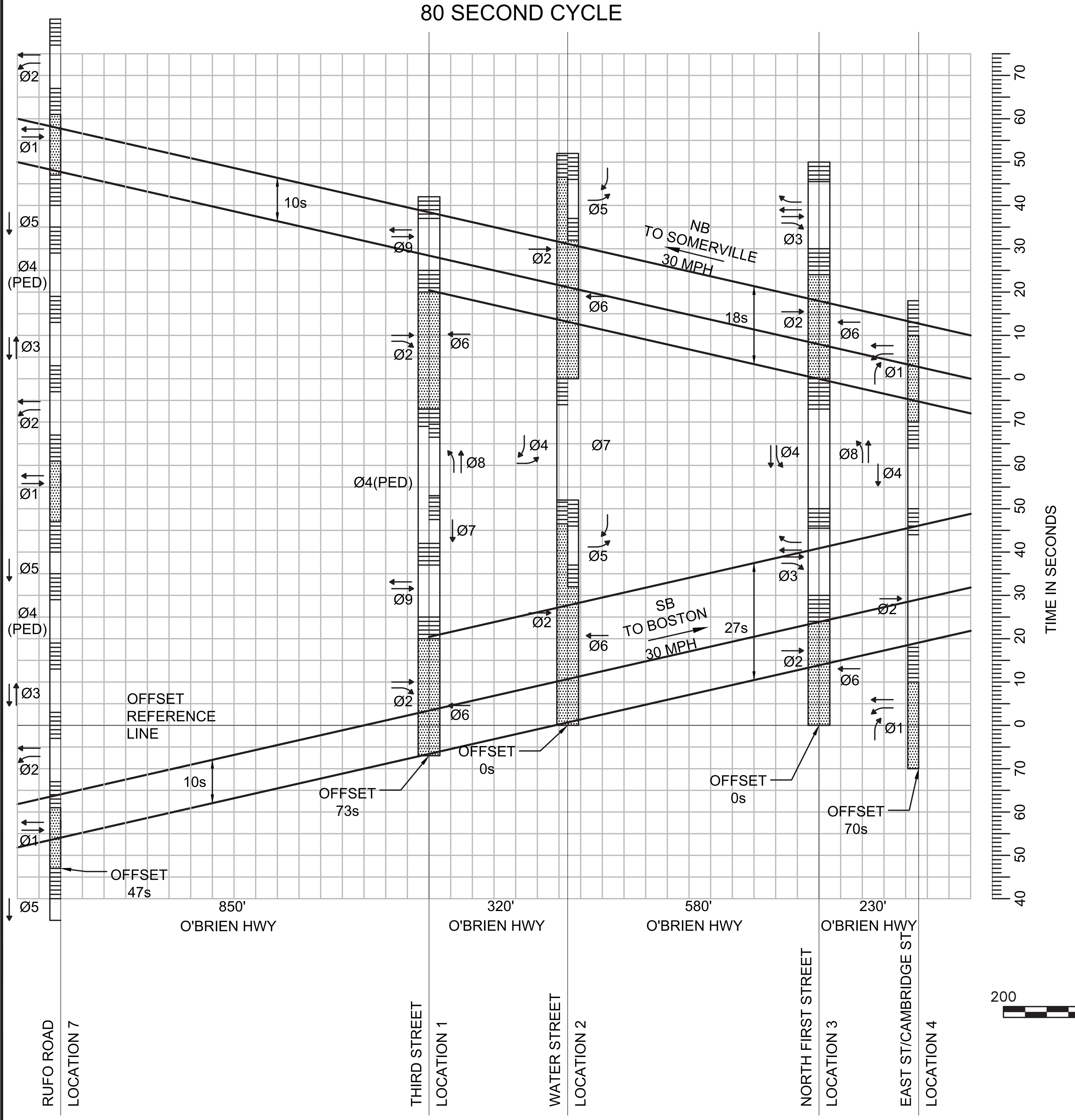
LOCATION 7: O'BRIEN HIGHWAY AT RUFO ROAD

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	MIN
CYCLE LENGTH	110 SEC	100 SEC	90 SEC	80 SEC	SPLIT
OFFSET	89	84	74	47	-
SPLIT Ø1	31	22	20*	20*	13(22)
SPLIT Ø2	22	22	20*	16*	12(22)
SPLIT Ø3	22	22	20*	16*	13(22)
SPLIT Ø4	23	22*	18*	16*	-(23)
SPLIT Ø5	12	12	12	12	12
COORDINATED PHASE	Ø1	Ø1	Ø1	Ø1	

CONTROLLER COORDINATION SETUP

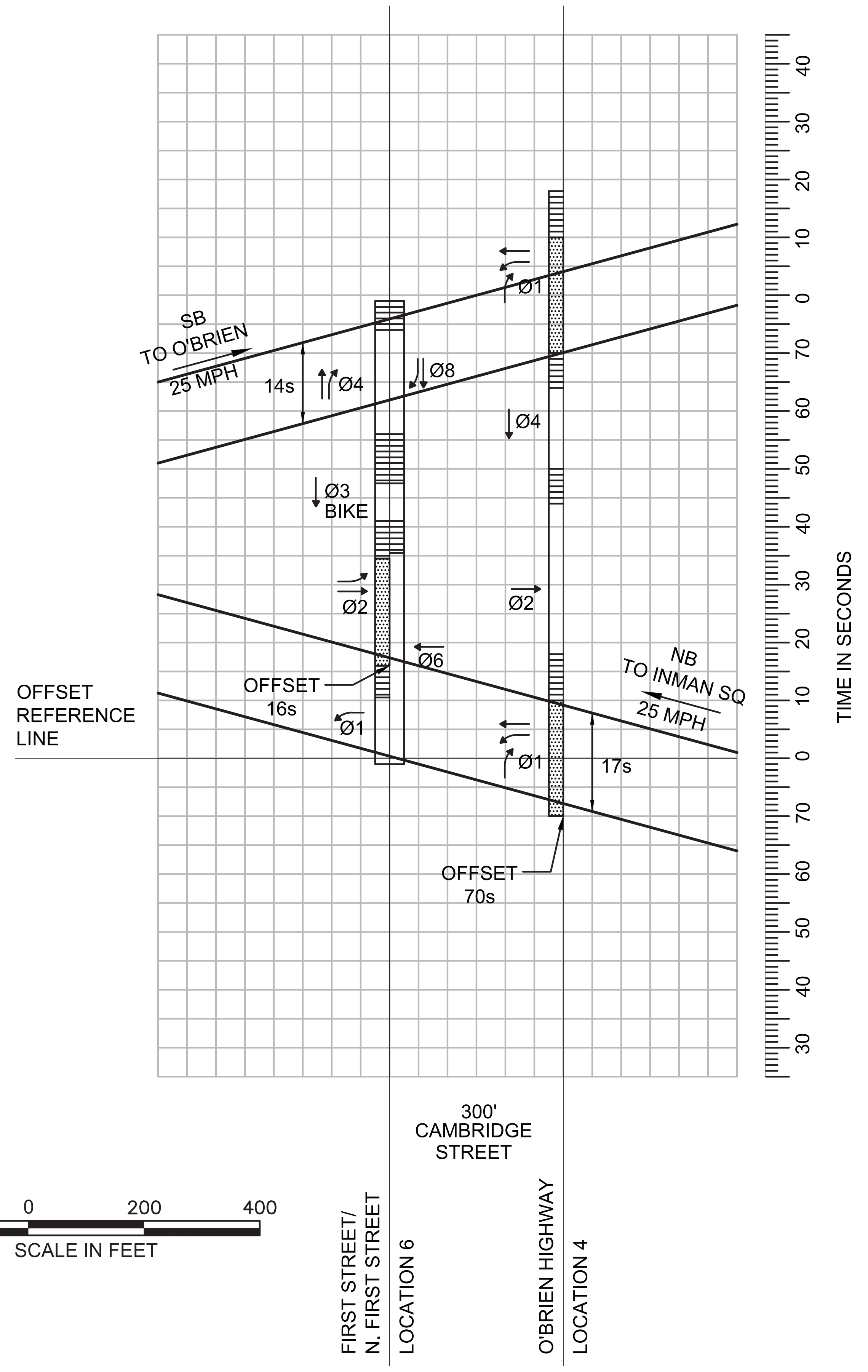
SET-UP	CODE						0	1	2	3
OPERATION	1	1	1	1	1	1	FREE	AUTO	MANUAL	---
MODE (NORMAL)	1	1	0	1	0	0	PERM	YIELD	PM YLD	PM OMT
MAXIMUM	2	0	0	0	0	0	M INH	MAX 1	MAX 2	---
CORRECTION	2	2	2	2	2	2	DWELL	MX DW	SH WAY	SW+
OFFSET	0	0	0	0	0	0	BEGIN	END	---	---
FORCE	0	0	0	0	0	0	PLAN	CYCLE	---	---
LOCATION	1	2	3	4	6	7				

PLAN 4 - OVERNIGHT
80 SECOND CYCLE

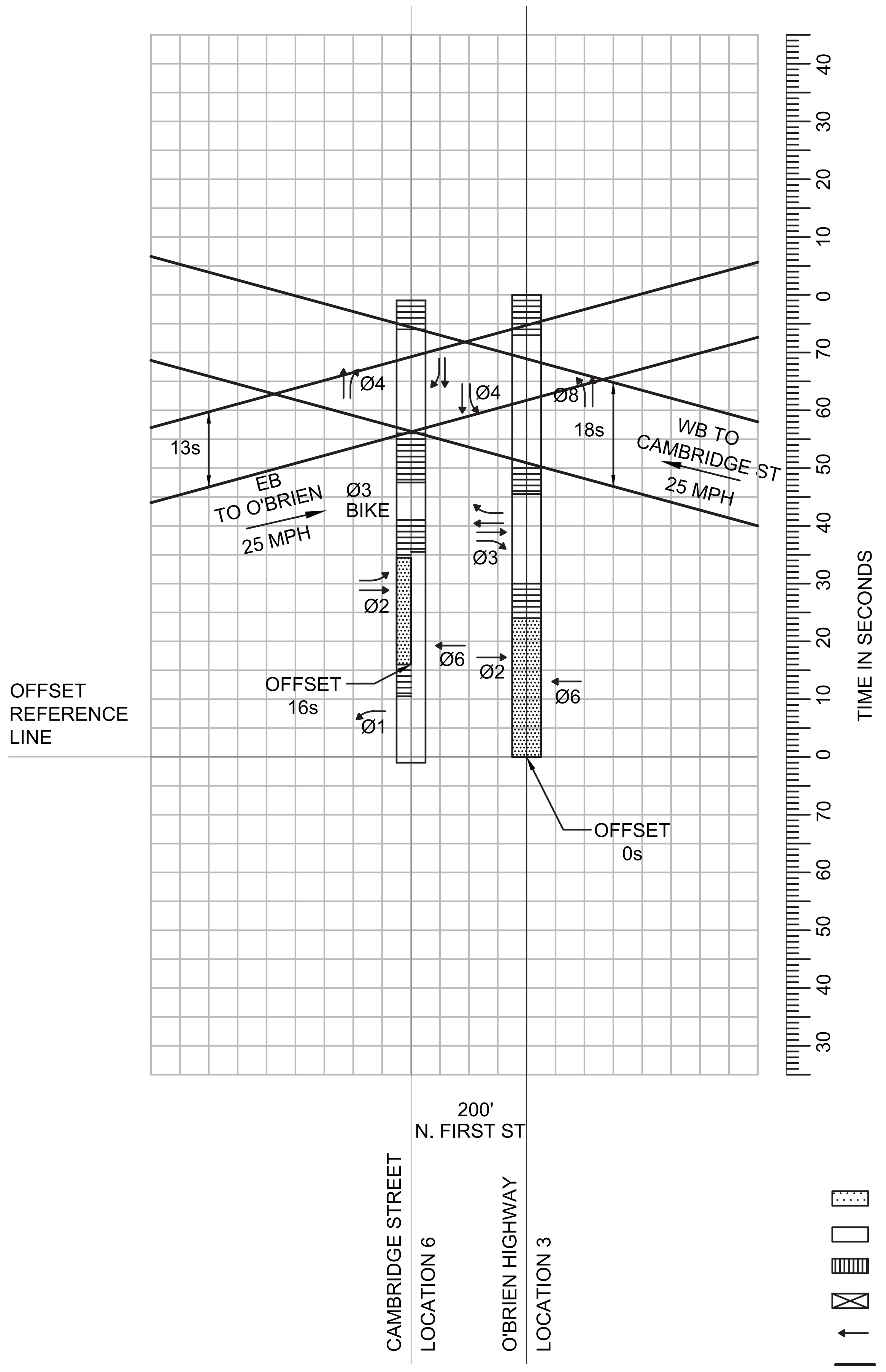


200 0 200 400
SCALE IN FEET

PLAN 4 - OVERNIGHT
80 SECOND CYCLE



PLAN 4 - OVERNIGHT
80 SECOND CYCLE



DAILY & WEEKLY COORDINATION PROGRAM

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 110" CYCLE	0530-1000	-	-
PLAN 2 100" CYCLE	1500-2000	-	-
PLAN 3 90" CYCLE	1000-1500 2000-2300	1000-1800	1000-1800
PLAN 4 80" CYCLE	0000-0530 2300-2400	0000-1000 1800-2400	0000-1000 1800-2400
FREE OPERATION	-	-	-
FLASH OPERATION	-	-	-

LEGEND

▨	COORDINATED PHASE GREEN TIME
☐	NON-COORDINATED VEHICLE PHASE GREEN TIME
▥	CLEARANCE TIME (YELLOW + RED)
☒	EXCLUSIVE PEDESTRIAN PHASE
←	PHASE MOVEMENT
—	INTERSECTION-INTERSECTION COORDINATION BAND

CAMBRIDGE
O'BRIEN HIGHWAY
TEMPORARY TRAFFIC CONTROL PLANS
GENERAL NOTES & LEGEND
SHEET 73 OF 120

11554-TTCP.DWG
Plotted on 13-Jul-2021 12:10 PM

GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWIRE (MASH).
2. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS.
3. WORK HOURS SHALL BE AS STATED IN THE APPROVED STATE HIGHWAY ACCESS PERMIT. WORK SHALL NOT AFFECT TRAFFIC PATTERNS DURING PEAK TRAFFIC PERIODS. PEAK TRAFFIC PERIODS ARE DEFINED AS MONDAY THROUGH FRIDAY 6:00 AM-10:00 AM AND 3:00 PM-7:00 PM. NIGHTTIME WORK MAY BE PERMITTED FOR CERTAIN ELEMENTS OF THE WORK (7:00 PM TO 6:00 AM) UPON WRITTEN APPROVAL OF THE ENGINEER.
4. ALL DRUMS SHALL BE SET AT 20' ON CENTER (O.C.) MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
5. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN SAFE AND REASONABLE ABUTTER ACCESS. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
6. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS.
7. FOR DROP-OFFS 4" OR LESS WITHIN THE CLEAR ZONE, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES.
8. CONTRACTOR SHALL STAGE WORK SUCH THAT A DROP-OFF OF NO MORE THAN 4" EXISTS AT THE END OF EACH WORK DAY WITHIN THE CLEAR ZONE AT ANY TIME.
9. 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
10. TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
11. SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
12. SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
13. SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN.
14. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN NCHRP 350 AND/OR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD.
15. TEMPORARY MARKINGS SHALL BE WATER-BORNE PAINT. TEMPORARY MARKINGS SHALL BE USED AS DIRECTED BY THE ENGINEER.
16. WHERE EXIST MARKINGS CONFLICT WITH TEMPORARY MARKINGS, REMOVE BY APPROVED METHOD.
17. REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
18. CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
19. W21-7 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF AREAS WHERE UTILITY CASTINGS HAVE BEEN RAISED IN ADVANCE OF PAVING OPERATIONS OR AS REQUESTED BY THE ENGINEER.
20. W8-15 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF PAVEMENT MILLING AREAS OR AS REQUESTED BY THE ENGINEER.
21. THERE IS NO DESIGNATED BICYCLE LANE ON O'BRIEN HIGHWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC. BICYCLE LANE ALONG CAMBRIDGE STREET MAY BE CLOSED AS NECESSARY. REFER TO TYPICAL BICYCLE LANE CLOSURE DETAIL ON SHEET 76 FOR ADDITIONAL INFORMATION.
22. FOR OPERATIONAL LANE CLOSURE / SHIFT DETAILS SIGNS SHALL BE PLACED ON ALL SIDE STREETS WITHIN THE DISTANCES SHOWN.
23. CONTRACTOR SHALL SECURE THE WORK AREA TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
24. THE FIRST 10 DRUMS ON TAPERS SHALL BE REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS.
25. ILLUMINATION REQUIRED FOR NIGHTTIME WORK APPROVED BY THE ENGINEER SHALL BE IN ACCORDANCE WITH MASSDOT STANDARDS.
26. CONTRACTOR SHALL COORDINATE WITH MASSDOT AND MBTA REGARDING MBTA BUS AND GREEN LINE OPERATIONS DURING CONSTRUCTION.
27. W20-1c OR MA-R2-10a SIGNS SHOWN ON ADVANCE SIGN SCHEMATIC MAY BE USED IN LIEU OF THOSE SIGNS SHOWN ON TYPICAL DETAILS ON THE TEMPORARY TRAFFIC CONTROL PLANS IF MINIMUM SIGN SPACING IS MET.
28. THE CONTRACTOR SHALL ORIENT BARRICADES (TYPE I, TYPE II, OR TYPE III) SUCH THAT THE STRIPES ON BARRICADE RAILS SHALL BE SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION ROAD USERS ARE TO PASS IN ACCORDANCE WITH SECTION 6F.68.03 OF THE MUTCD.
29. THE CONTRACTOR SHALL RESTORE ALL OBSCURED OR DAMAGED FUNCTIONAL CROSSWALK PAVEMENT MARKINGS AT THE END OF EACH SHIFT.
30. PRIOR TO IMPLEMENTING A PEDESTRIAN DETOUR THE CONTRACTOR SHALL WALK THE DETOUR ROUTE TO VERIFY IT FOR AVAILABILITY, ADA COMPLIANCE AND THAT APPROPRIATE PEDESTRIAN SIGNAGE HAS BEEN INSTALLED.

LEGEND

Ⓟ	POLICE OFFICER
Ⓢ	TRAFFIC SIGNAL
●	REFLECTORIZED DRUM
◉	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS (SEE NOTE 24)
⊥	TEMPORARY CONSTRUCTION SIGN
▲	TRAFFIC CONE
╤╤	TYPE III BARRICADE (SEE NOTE 28)
➡	ARROW BOARD (AB) (RIGHT OR LEFT)
▨	WORK AREA (PUBLIC ACCESS RESTRICTED)
←	TRAFFIC FLOW
↖	PEDESTRIAN ROUTE
⋱	CONSTRUCTION FENCE
▚	TEMPORARY PORTABLE PEDESTRIAN BARRICADE
NTS	NOT TO SCALE

BUFFER SPACING

SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305
45	360
50	425

LANE TAPER LENGTH FORMULAS

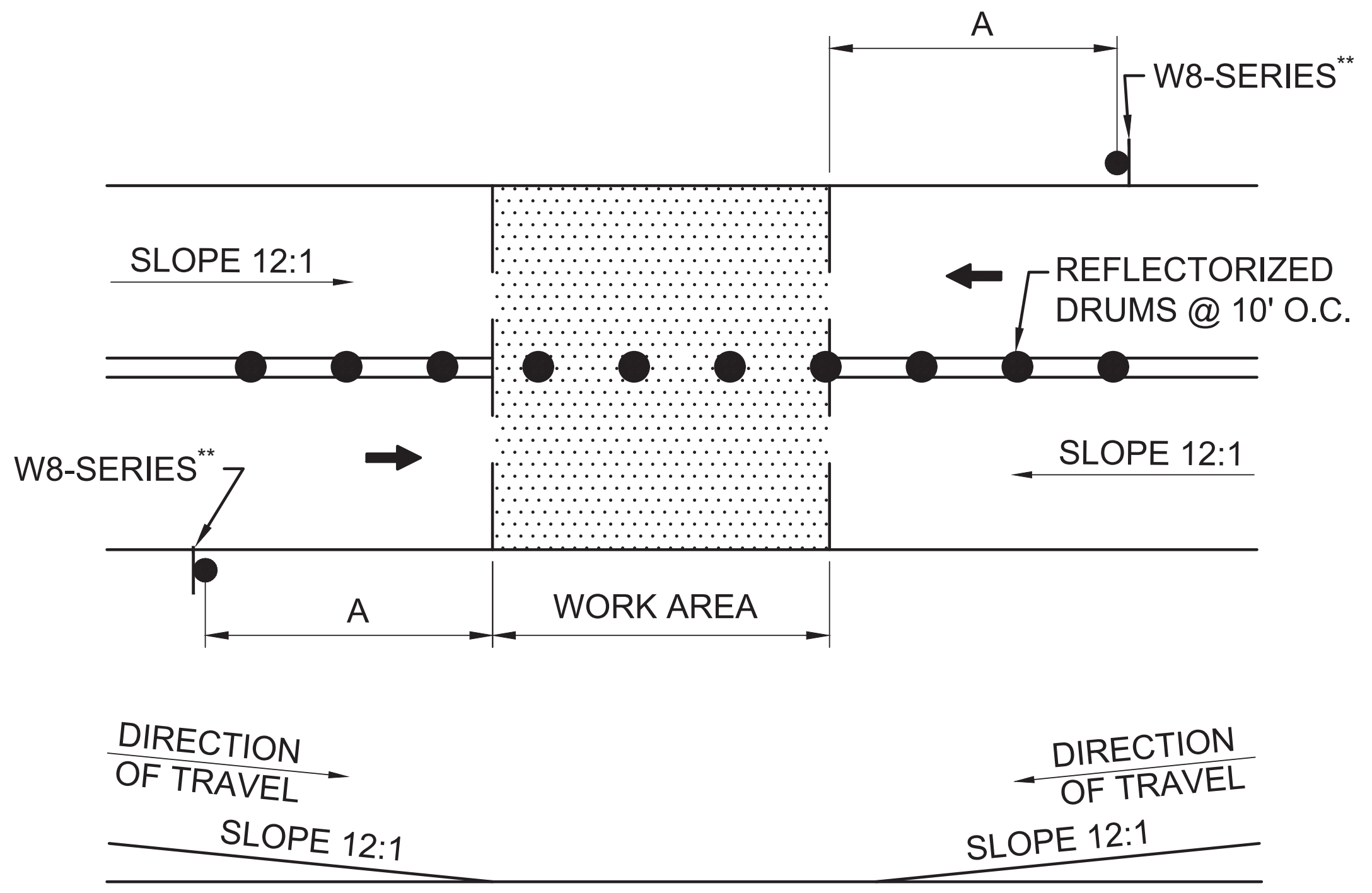
L= TAPER LENGTH IN FEET
W= WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET
S= POSTED SPEED LIMIT IN MPH

POSTED SPEED	
40 MPH OR LESS	GREATER THAN 40 MPH
$L=\frac{WS^2}{60}$	$L=WS$

NOTE:
1. CONTRACTOR SHALL USE DESIGN SPEED OF 35 MPH TO CALCULATE LANE TAPER LENGTHS.

ADVANCE SIGN SPACING

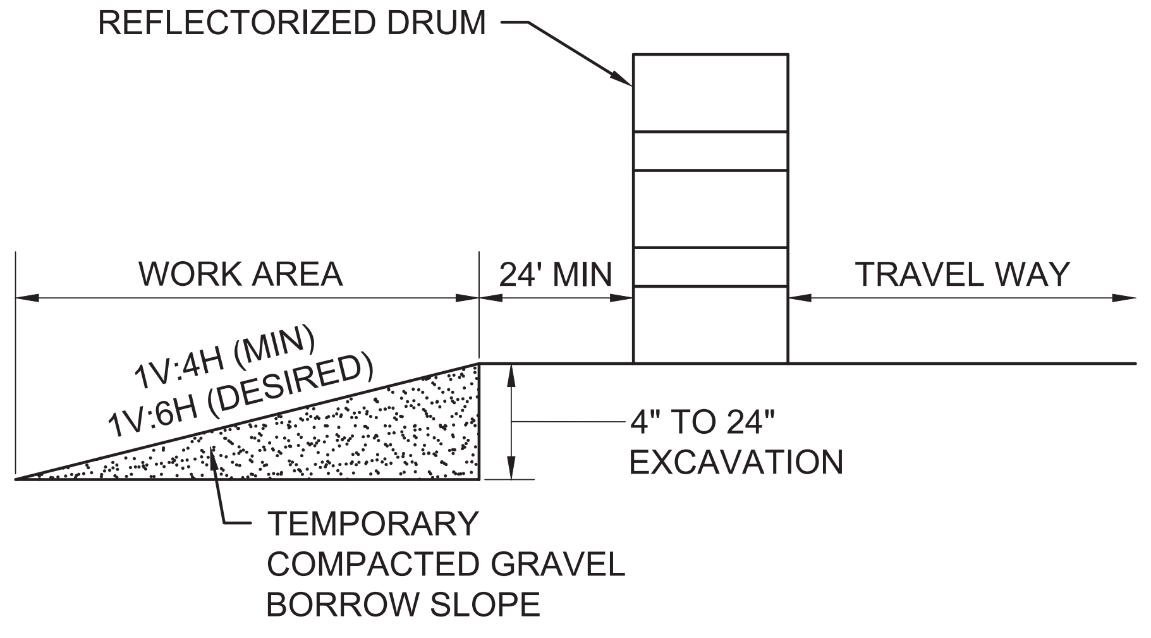
ROAD	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
O'BRIEN HIGHWAY, LAND BLVD & CHARLESTOWN AVE	350	350	350	350
ALL OTHER ROADWAYS	100	100	100	100



NOTES:
1. SQUARE OFF THE FULL WIDTH OF THE ROADWAY AT THE END OF WORK DAY
2. ** CONTRACTOR SHALL INSTALL W8-1, W8-3, OR W8-8 SIGN, AS APPROPRIATE, ON ALL ROADWAYS IN ADVANCE OF THE TRANSITION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TEMPORARY PAVEMENT TRANSITION

SCALE: NTS



NOTE:
1. CONTRACTOR SHALL INSTALL W8-9 SIGN ON ALL ROADWAYS 350 FT IN ADVANCE OF THE START OF DROP-OFF CONDITION.

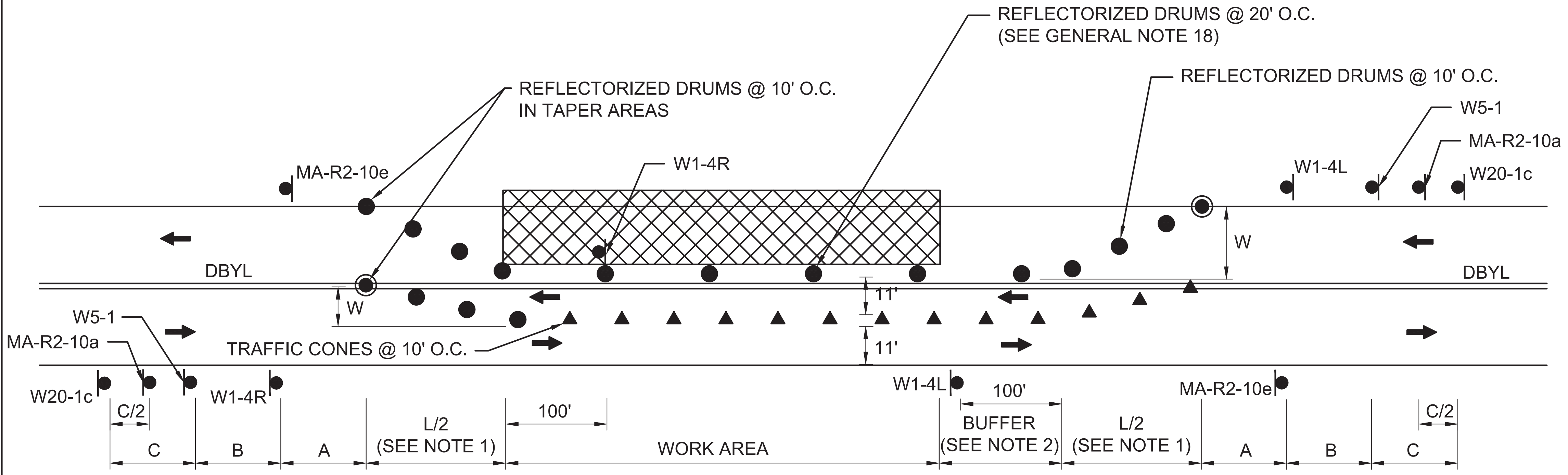
TYPICAL ROADWAY DROP-OFF PROTECTION

SCALE: NTS

OPERATIONAL SIGNING

LANE CLOSURES SHOWN ARE FOR TEMPORARY CONSTRUCTION.
ALL DRUMS AND SIGNS ARE SHOWN AS THEY SHOULD APPEAR
DURING THE WORKING DAY, OR WHILE OPERATING IN THE WORK ZONE.
REFER TO GENERAL NOTES FOR FURTHER DETAILS.

CAMBRIDGE
O'BRIEN HIGHWAY
TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS
SHEET 74 OF 120

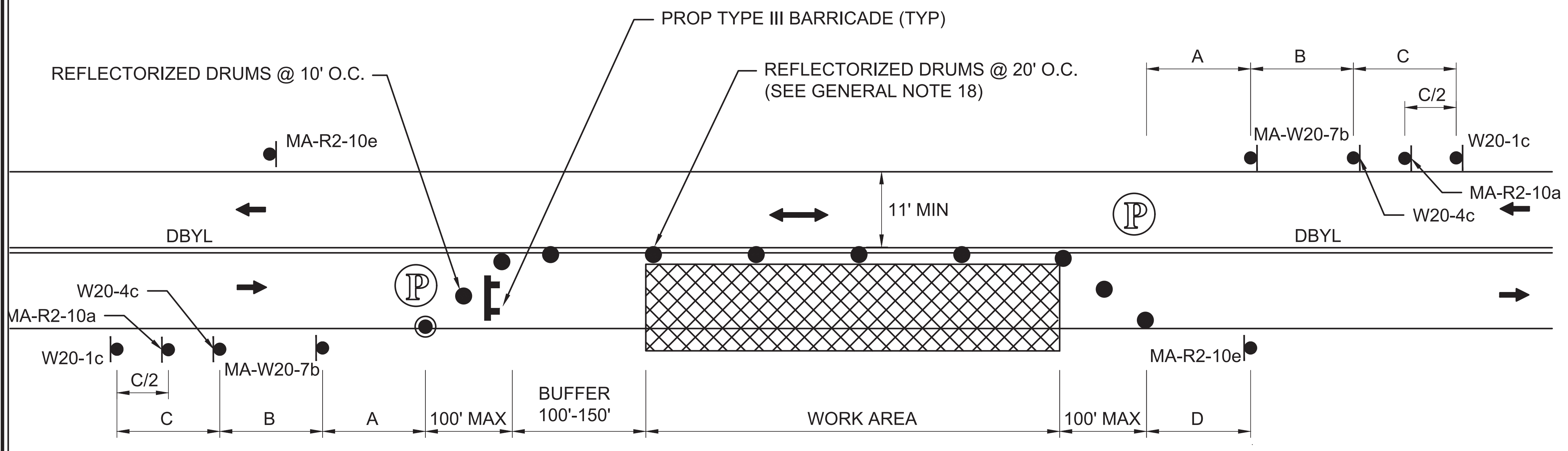


NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE BUFFER SPACING CHART ON TTCP GENERAL NOTES & LEGEND SHEET.
3. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

TYPICAL TWO-WAY STREET LANE SHIFT

SCALE: NTS

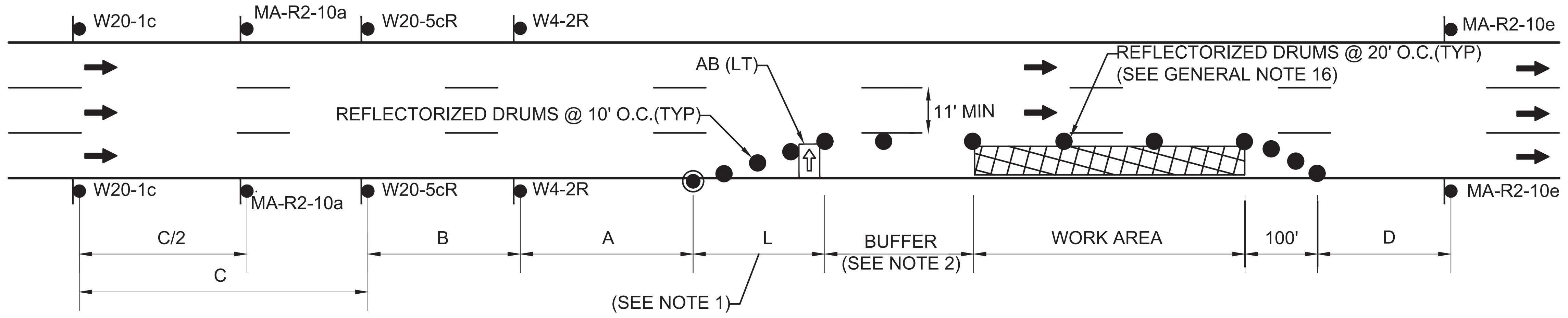


NOTES:

1. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC

SCALE: NTS

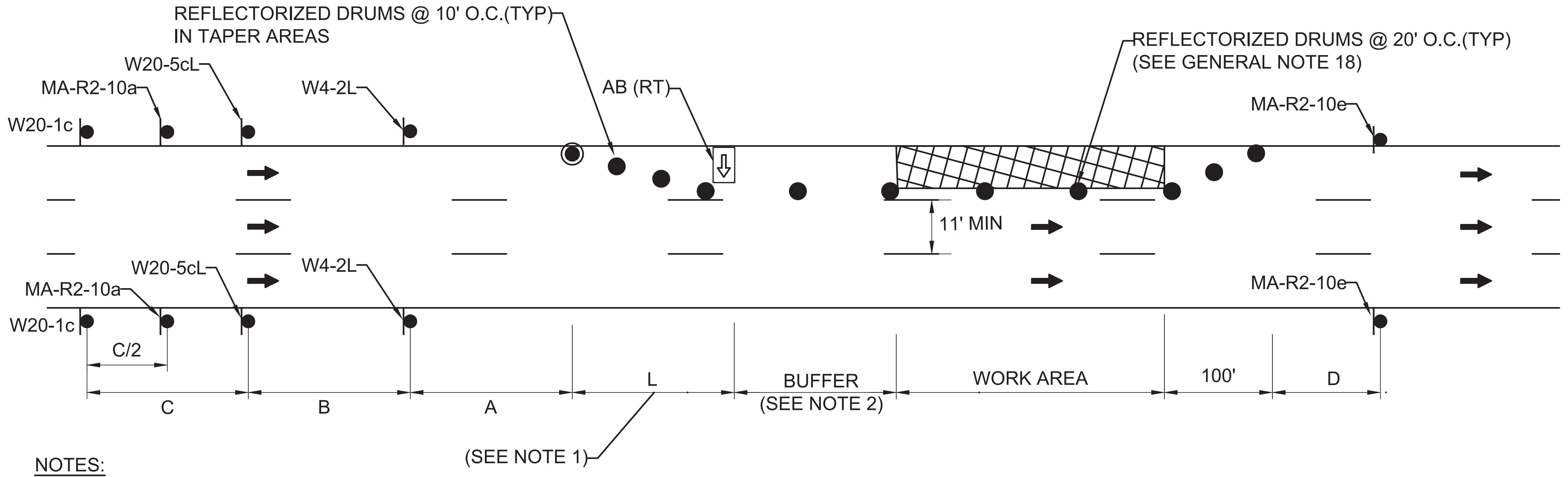


NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE BUFFER SPACING CHART ON TTCP GENERAL NOTES & LEGEND SHEET.
3. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

ONE LANE CLOSURE - RIGHT

SCALE: NTS

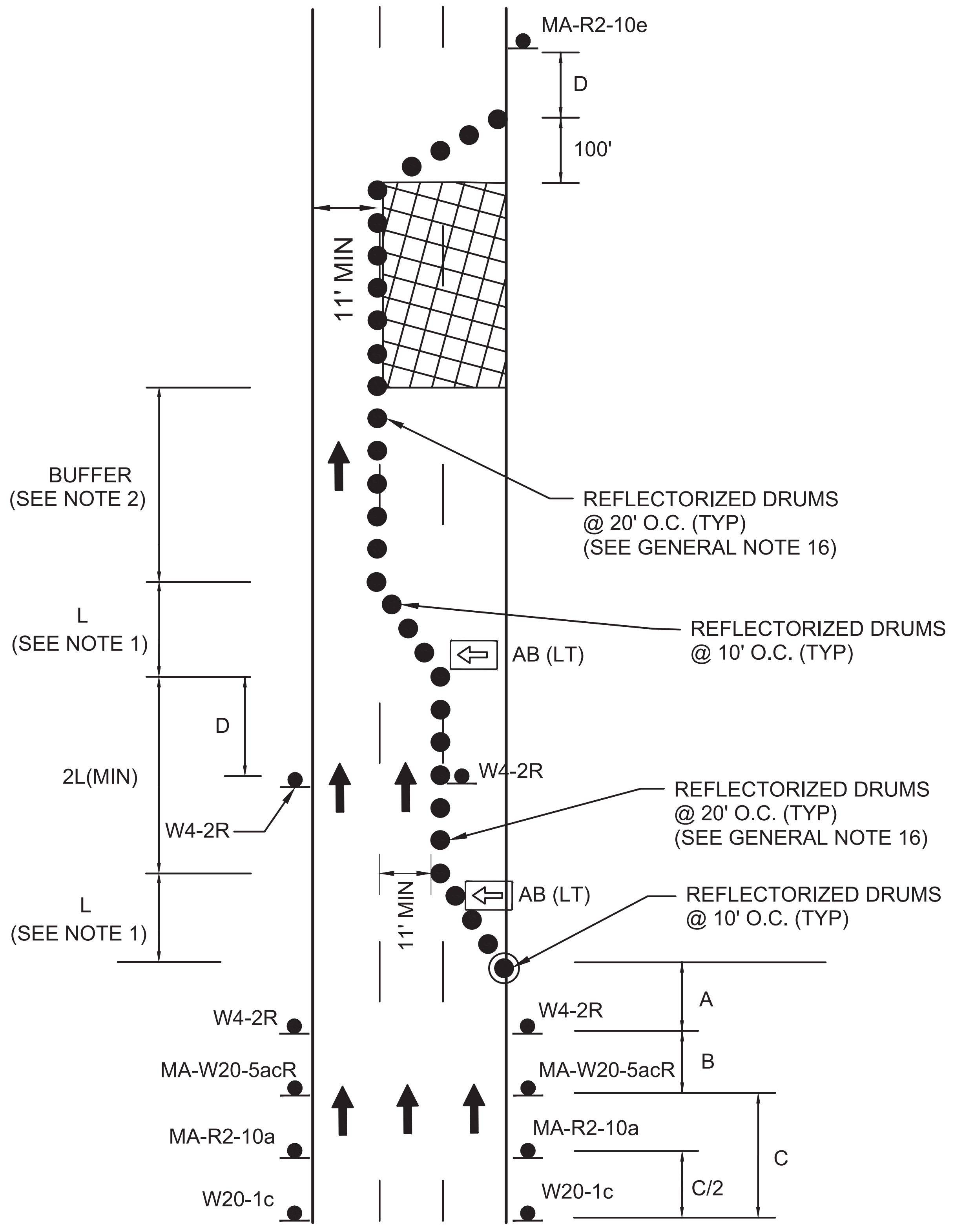


NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE BUFFER SPACING CHART ON TTCP GENERAL NOTES & LEGEND SHEET.
3. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

ONE LANE CLOSURE - LEFT

SCALE: NTS

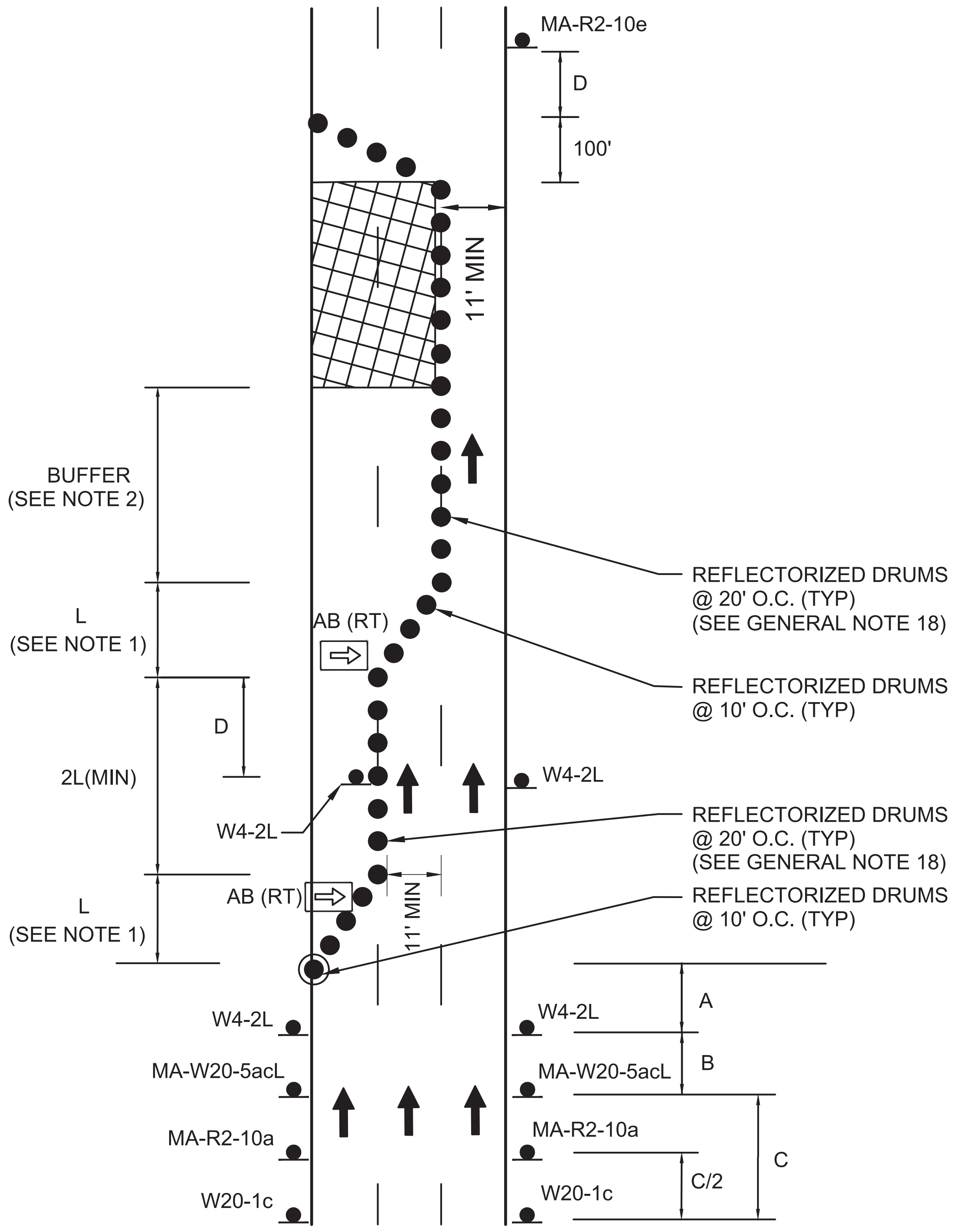


NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE BUFFER SPACING CHART ON TTCP GENERAL NOTES & LEGEND SHEET.
3. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

TYPICAL TWO LANE CLOSURE - RIGHT

SCALE: NTS

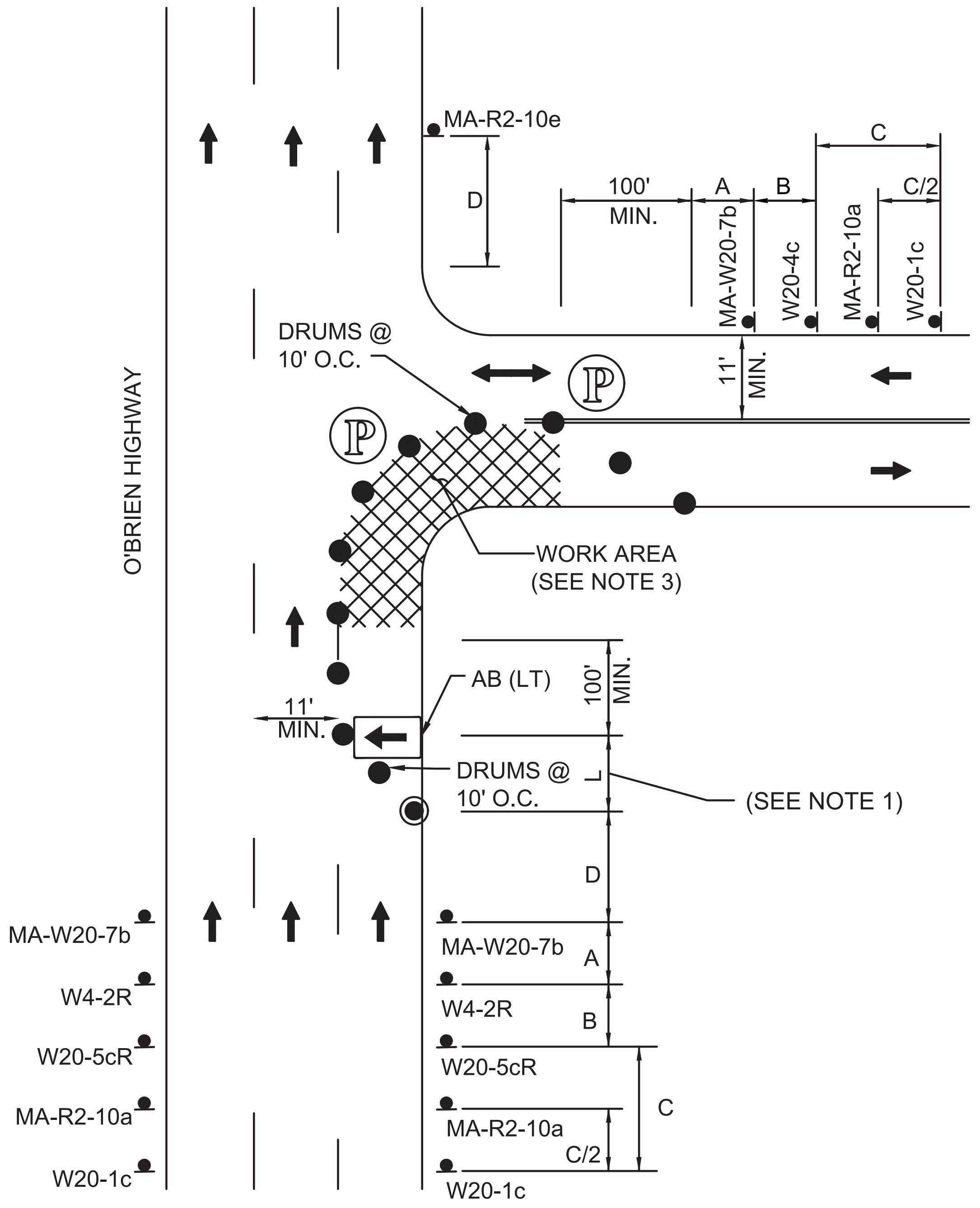


NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE BUFFER SPACING CHART ON TTCP GENERAL NOTES & LEGEND SHEET.
3. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

TYPICAL TWO LANE CLOSURE - LEFT

SCALE: NTS

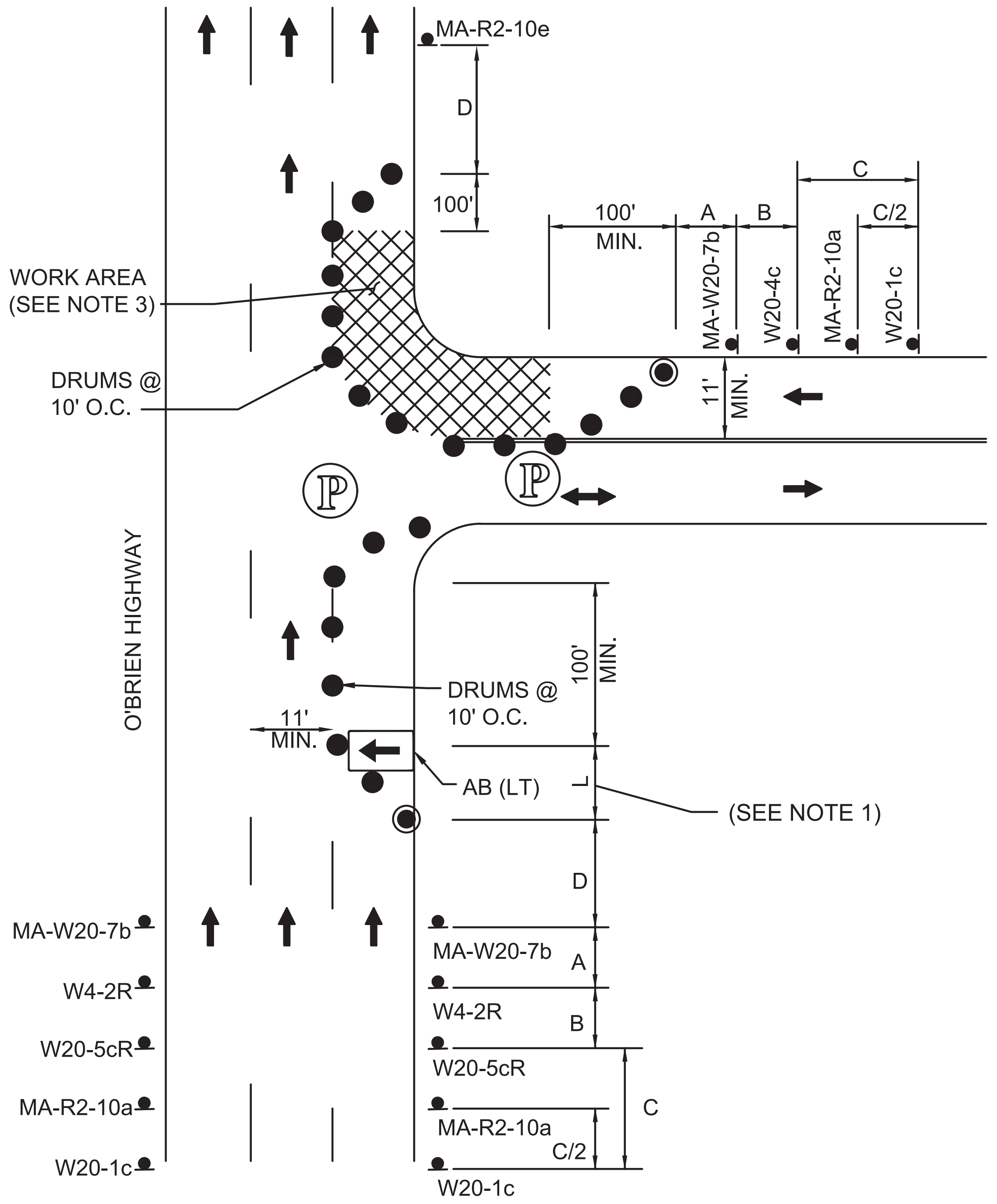


NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.
3. CONTRACTOR TO MAINTAIN ADA-COMPLIANT ACCESSIBLE PEDESTRIAN ACCOMMODATION THROUGH THE WORK AREA AT ALL TIMES. IF PEDESTRIAN ACCOMMODATION CANNOT BE PROVIDED, CLOSE EXIST SIDEWALK OR CROSSWALK AND DETOUR PEDESTRIANS TO THE OTHER SIDE. REFER TO PEDESTRIAN BYPASS DETAILS ON SHEET 76 FOR ADDITIONAL INFORMATION.

TYPICAL WORK ON NEAR SIDE OF AN INTERSECTION

SCALE: NTS



NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.
3. CONTRACTOR TO MAINTAIN ADA-COMPLIANT ACCESSIBLE PEDESTRIAN ACCOMMODATION THROUGH THE WORK AREA AT ALL TIMES. IF PEDESTRIAN ACCOMMODATION CANNOT BE PROVIDED, CLOSE EXIST SIDEWALK OR CROSSWALK AND DETOUR PEDESTRIANS TO THE OTHER SIDE. REFER TO PEDESTRIAN BYPASS DETAILS ON SHEET 76 FOR ADDITIONAL INFORMATION.

TYPICAL WORK ON FAR SIDE OF AN INTERSECTION

SCALE: NTS

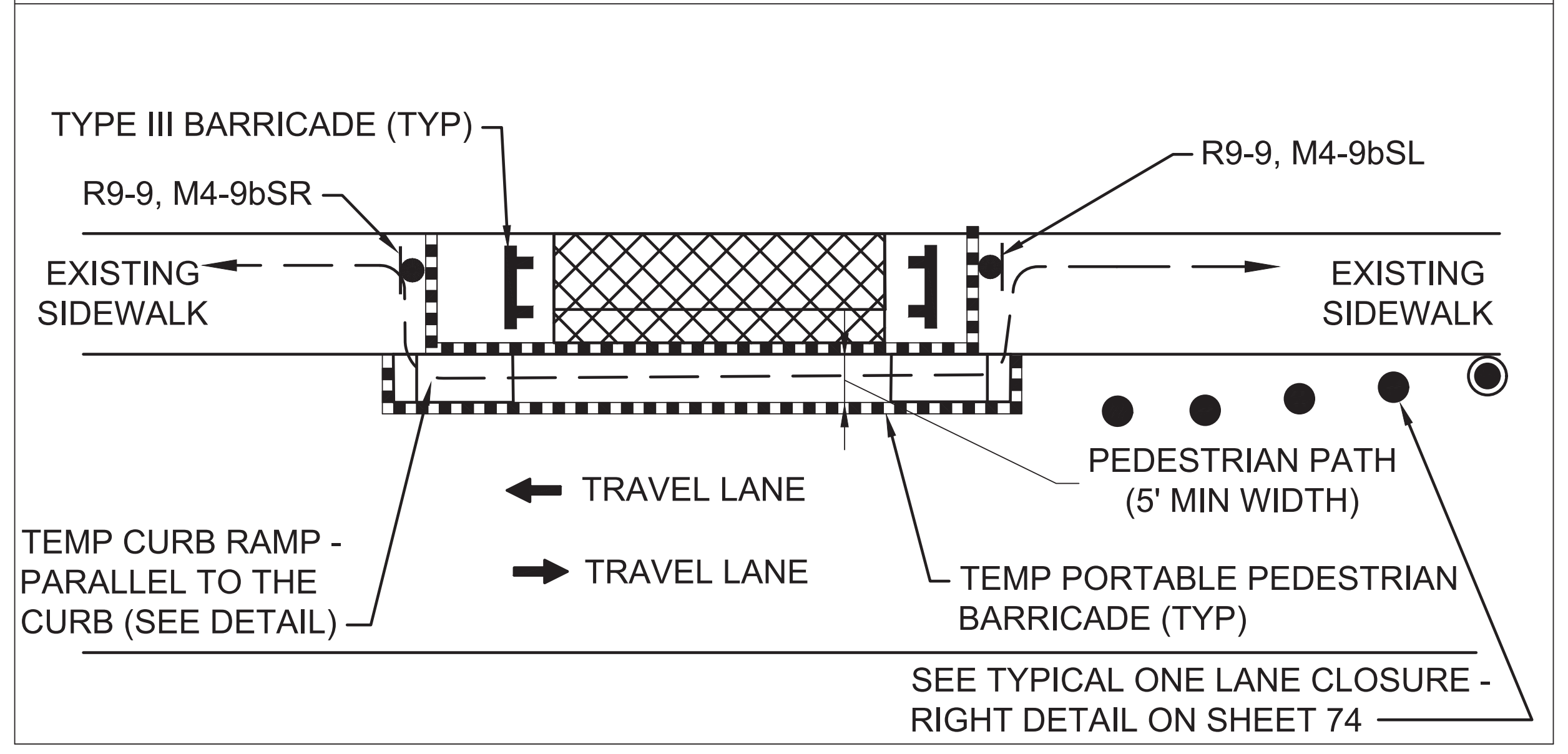
CAMBRIDGE
O'BRIEN HIGHWAY
TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS
SHEET 76 OF 120

11554-TTCP.DWG Plotted on 13-Jul-2021 12:10 PM

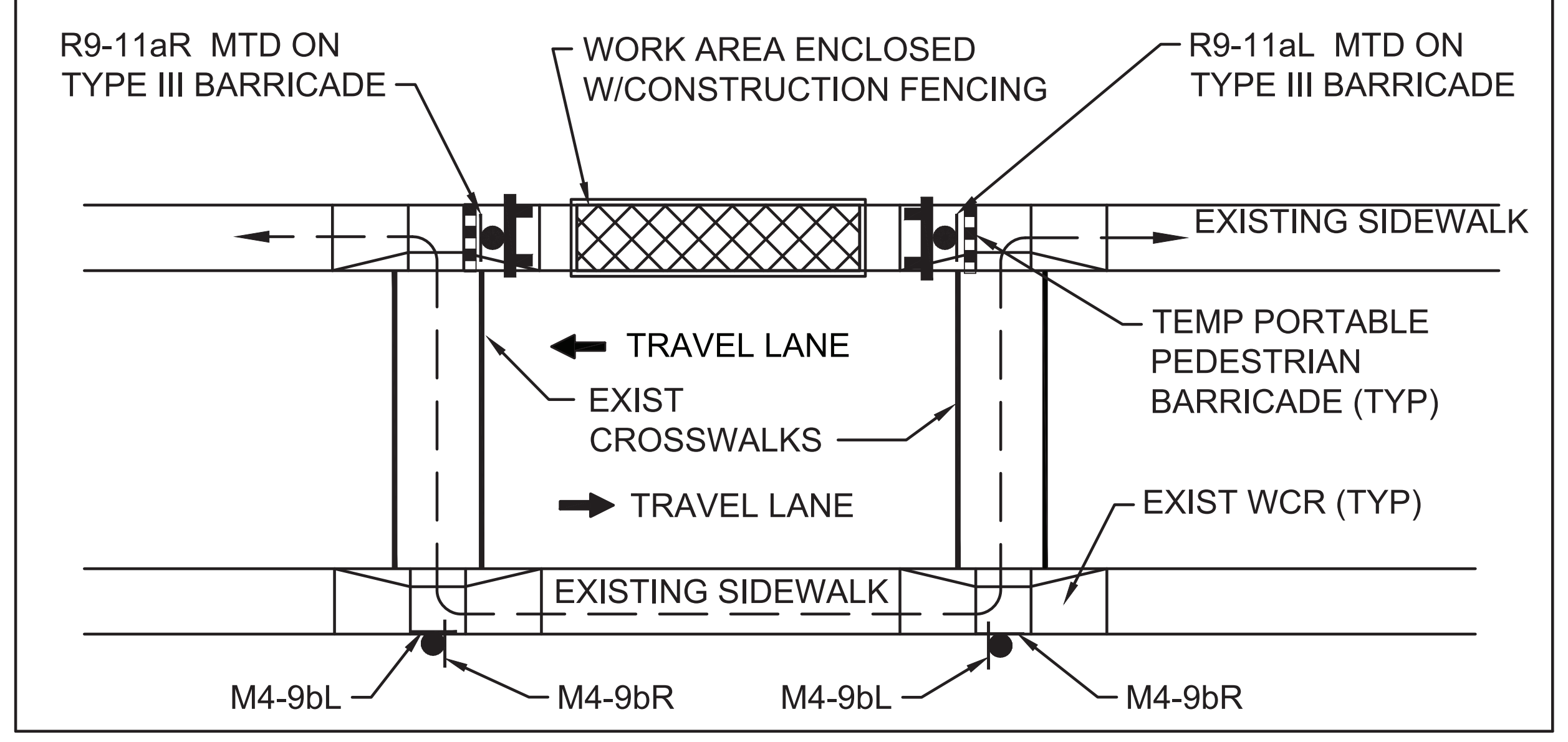
NOTES:

1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. ◄— — ◄ INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, THE APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AT EXISTING OR TEMPORARY CROSSWALKS AS SHOWN IN PEDESTRIAN BYPASS TYPE II OR TYPE III, AND AS DIRECTED BY THE ENGINEER.
6. PROPOSED TEMPORARY CROSSWALKS SHALL BE 12" WIDE SURFACE APPLIED TAPE OR REFLECTORIZED PAINT AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS AND INCLUDE THE USE OF A COMPLIANT TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM AT ALL TIMES.
8. CONTRACTOR SHALL MAINTAIN AS WIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY, THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS. A 5' x 5' PASSING AREA SHALL BE PROVIDED IN INTERVALS NOT EXCEEDING 200 FEET.
9. TEMPORARY WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT, MAAB, AND ADAAG REQUIREMENTS.
10. TEMPORARY PORTABLE PEDESTRIAN BARRICADE AND TEMPORARY CURB RAMP SHALL BE PAID FOR UNDER ITEM 852.1 TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM.

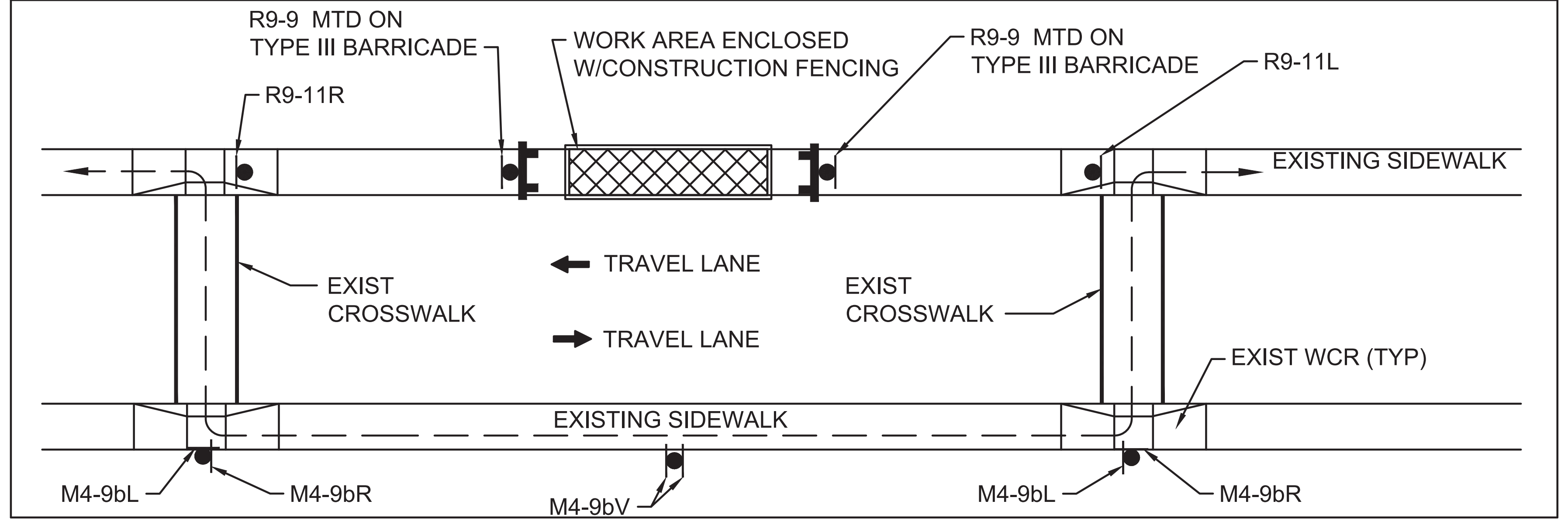
PEDESTRIAN BYPASS TYPE I


TYPE III BARRICADE (TYP)
R9-9, M4-9bSR
R9-9, M4-9bSL
EXISTING SIDEWALK
EXISTING SIDEWALK
TRAVEL LANE
TRAVEL LANE
PEDESTRIAN PATH (5' MIN WIDTH)
TEMP CURB RAMP - PARALLEL TO THE CURB (SEE DETAIL)
TEMP PORTABLE PEDESTRIAN BARRICADE (TYP)
SEE TYPICAL ONE LANE CLOSURE - RIGHT DETAIL ON SHEET 74

PEDESTRIAN BYPASS TYPE II

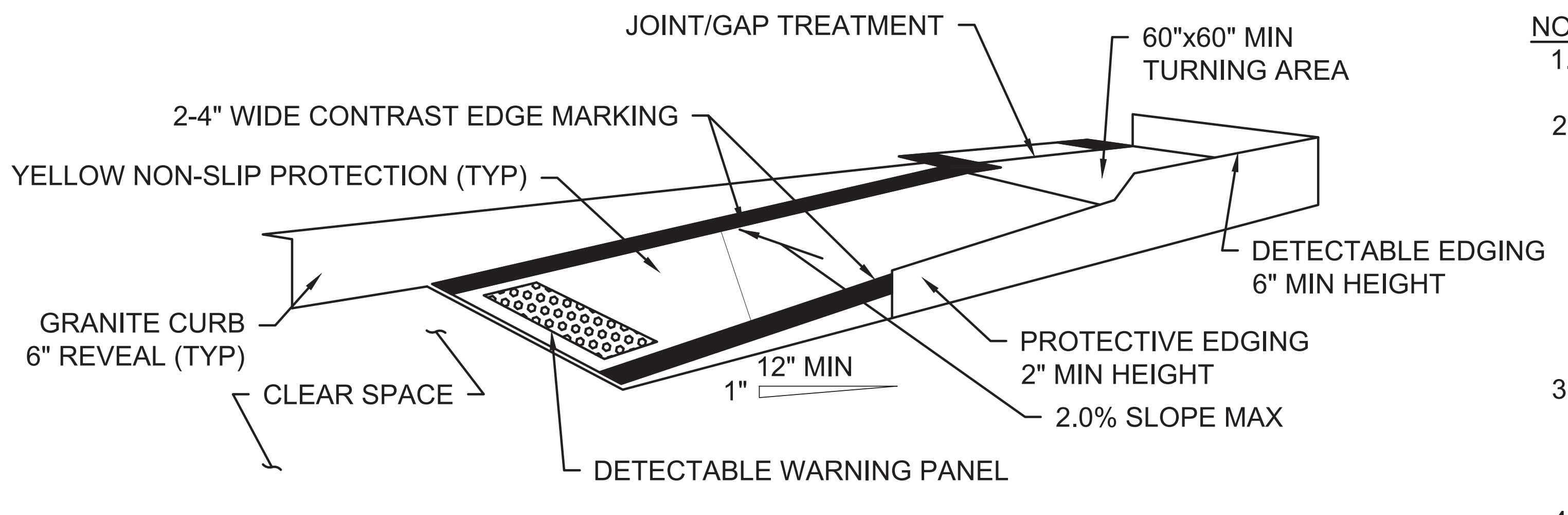

R9-11aR MTD ON TYPE III BARRICADE
WORK AREA ENCLOSED W/CONSTRUCTION FENCING
R9-11aL MTD ON TYPE III BARRICADE
EXISTING SIDEWALK
TRAVEL LANE
EXIST CROSSWALKS
TEMP PORTABLE PEDESTRIAN BARRICADE (TYP)
TRAVEL LANE
EXIST WCR (TYP)
EXISTING SIDEWALK
M4-9bL
M4-9bR
M4-9bL
M4-9bR

PEDESTRIAN BYPASS TYPE II

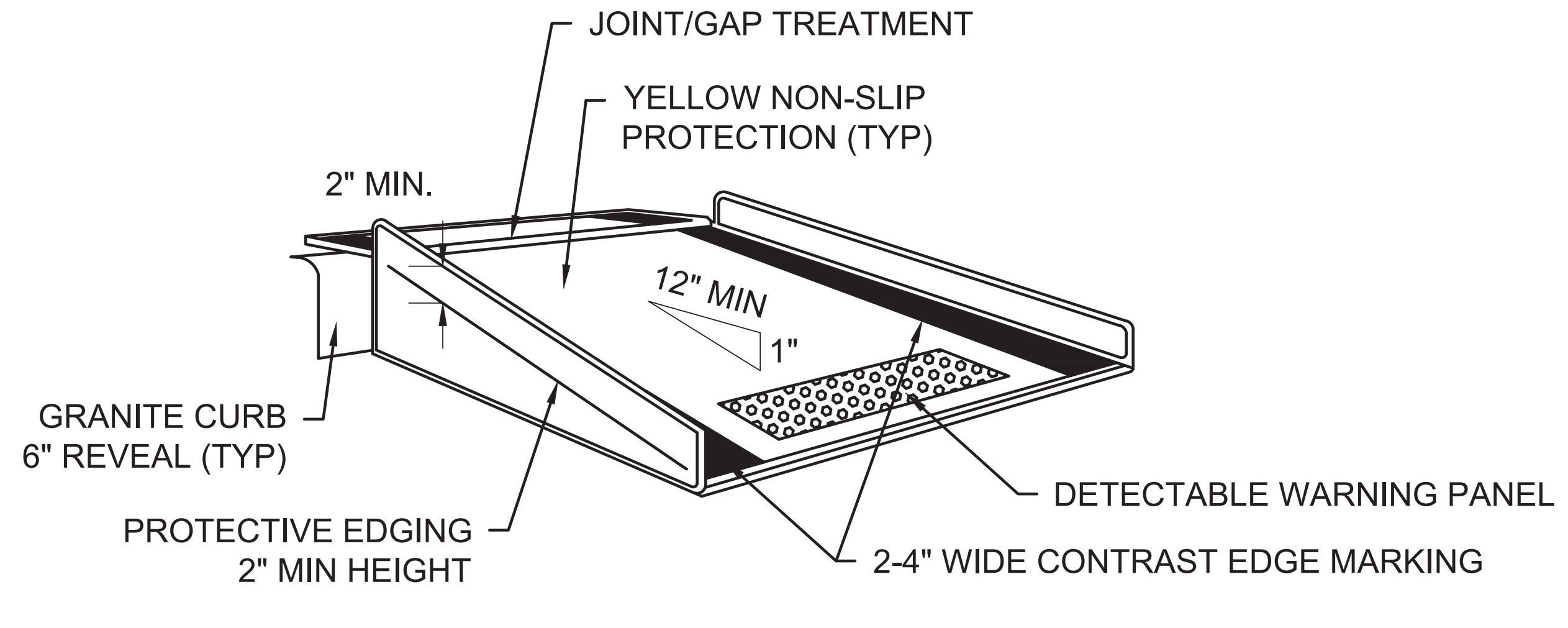


PEDESTRIAN BYPASS DETAIL

SCALE: NTS


JOINT/GAP TREATMENT
60"x60" MIN TURNING AREA
2-4" WIDE CONTRAST EDGE MARKING
YELLOW NON-SLIP PROTECTION (TYP)
DETECTABLE EDGING 6" MIN HEIGHT
GRANITE CURB 6" REVEAL (TYP)
PROTECTIVE EDGING 2" MIN HEIGHT
12" MIN
1"
2.0% SLOPE MAX
CLEAR SPACE
DETECTABLE WARNING PANEL

TEMPORARY CURB RAMP-PARALLEL TO CURB


JOINT/GAP TREATMENT
YELLOW NON-SLIP PROTECTION (TYP)
2" MIN.
12" MIN
1"
GRANITE CURB 6" REVEAL (TYP)
PROTECTIVE EDGING 2" MIN HEIGHT
DETECTABLE WARNING PANEL
2-4" WIDE CONTRAST EDGE MARKING

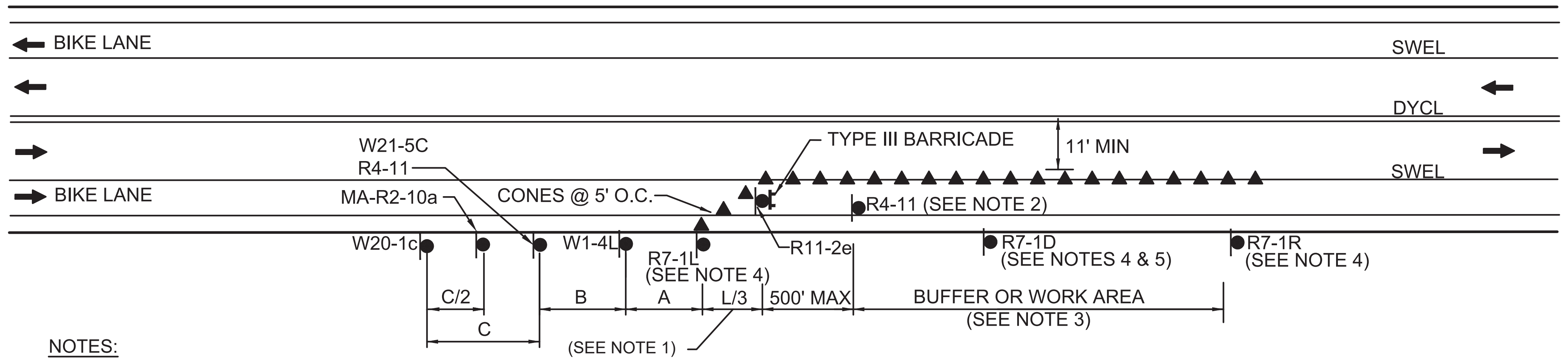
TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

NOTES:

1. CURB RAMPS SHALL BE 60" MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2" MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
3. DETECTABLE EDGING WITH 6" MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
6. CLEAR SPACE OF 48"x48" MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5" WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5" LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25" HIGH, AND BEVELED AT 1:2 BETWEEN 0.25" AND 0.5" HEIGHT.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.

TEMPORARY CURB RAMPS DETAIL

SCALE: NTS



NOTES:

1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. R4-11 SIGNS SHALL BE INSTALLED THROUGH WORK AREA AT 500' INTERVALS AS NEEDED.
3. PROVIDE A MINIMUM OF 200' BUFFER PRIOR TO ANY LANE CLOSURE PAST POINT OF BICYCLE LANE CLOSURE.
4. CONTRACTOR SHALL PROVIDE R7-1D SIGNS AS APPLICABLE AT EVERY 50 FEET ON BOTH SIDES OF ROAD TO RESTRICT PARKING WITHIN THE WORKZONE DURING CONSTRUCTION.

TYPICAL BICYCLE LANE CLOSURE

SCALE: NTS

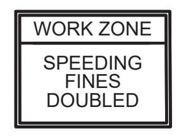
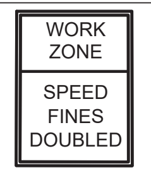
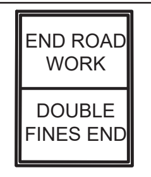
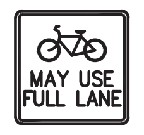
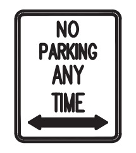
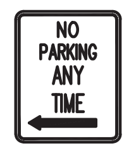
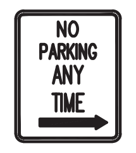
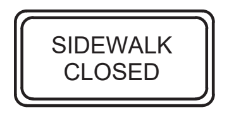
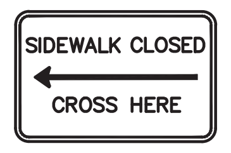
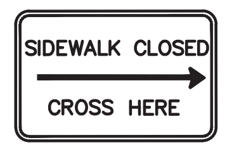
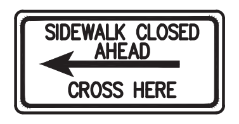
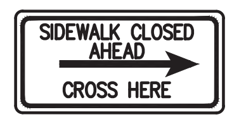
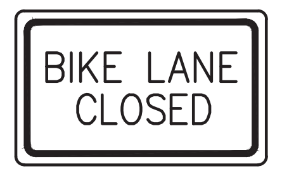
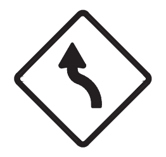
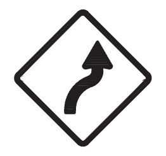
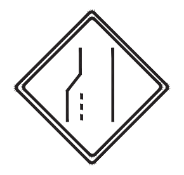
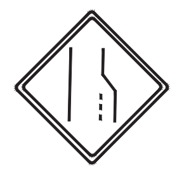
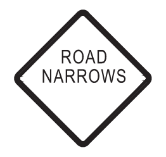
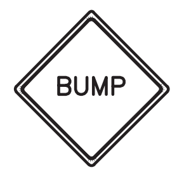
CAMBRIDGE
O'BRIEN HIGHWAY
TEMPORARY TRAFFIC CONTROL PLANS
ADVANCED SIGNING PLAN
SHEET 77 OF 120

NOTES:

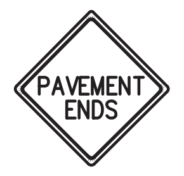
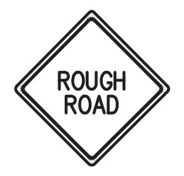
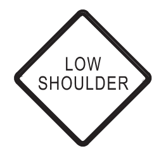
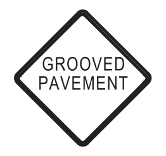
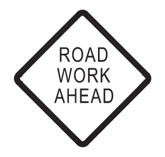
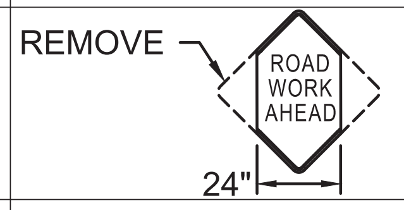
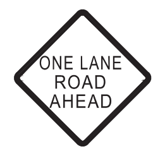
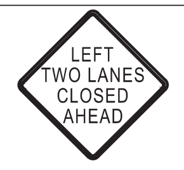
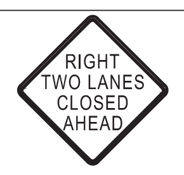
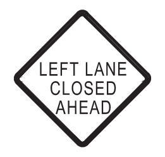
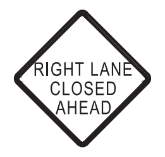
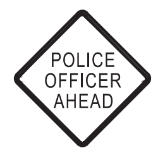
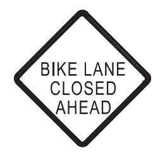
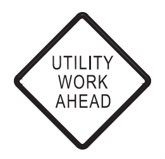
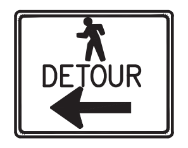
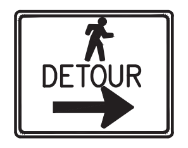
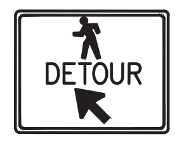
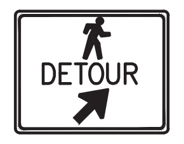
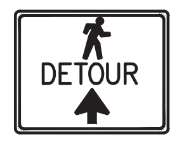
1. SIGNS TO BE INSTALLED AT PROJECT LIMITS AS SHOWN.
2. ALL ADVANCE SIGNS TO BE IN PLACE FOR THE DURATION OF THE PROJECT.
3. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY.
4. SEE GENERAL NOTE 27 ON TTCP GENERAL NOTES & LEGEND SHEET.

CAMBRIDGE
O'BRIEN HIGHWAY
TEMPORARY TRAFFIC CONTROL PLANS
SIGN SUMMARY
SHEET 78 OF 120

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACKGROUND	LEGEND	BORDER
MA-R2-10a	48"	36"		AS PER MASSDOT STANDARD			FLUORESCENT ORANGE WHITE	BLACK	BLACK
MA-R2-10a (MEDIAN)	24"	40"		4C 4C 4C 4C 4C	3" 2.5" 3" / 3" 2.5" 2.5" 3.5"	N/A	FLUORESCENT ORANGE WHITE	BLACK	BLACK
MA-R2-10e	36"	48"		AS PER MASSDOT STANDARD			FLUORESCENT ORANGE WHITE	BLACK	BLACK
R4-11	30"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R7-1D	12"	18"					WHITE	RED	RED
R7-1L	12"	18"					WHITE	RED	RED
R7-1R	12"	18"					WHITE	RED	RED
R9-9	24"	12"					WHITE	BLACK	BLACK
R9-11aL	24"	12"					WHITE	BLACK	BLACK
R9-11aR	24"	12"					WHITE	BLACK	BLACK
R9-11L	24"	18"					WHITE	BLACK	BLACK
R9-11R	24"	18"					WHITE	BLACK	BLACK
R11-2e	48"	30"					WHITE	BLACK	BLACK
W1-4L	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W1-4R	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W4-2L	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W4-2R	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W5-1	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W8-1	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY (CONTINUED)

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACKGROUND	LEGEND	BORDER
W8-3	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUORESCENT ORANGE	BLACK	BLACK
W8-8	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W8-9	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W8-15	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W20-1c	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W20-1c (MEDIAN)	36"	36"		5D 5D 5D	12.5" 4" 4" 12.5"	N/A	FLUORESCENT ORANGE	BLACK	BLACK
W20-4c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUORESCENT ORANGE	BLACK	BLACK
MA-W20-5acL	36"	36"		AS PER MASSDOT STANDARD			FLUORESCENT ORANGE	BLACK	BLACK
MA-W20-5acR	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
W20-5cL	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUORESCENT ORANGE	BLACK	BLACK
W20-5cR	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
MA-W20-7b	36"	36"		AS PER MASSDOT STANDARD			FLUORESCENT ORANGE	BLACK	BLACK
W21-5c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUORESCENT ORANGE	BLACK	BLACK
W21-7	36"	36"					FLUORESCENT ORANGE	BLACK	BLACK
M4-9bL	30"	24"					FLUORESCENT ORANGE	BLACK	BLACK
M4-9bR	30"	24"					FLUORESCENT ORANGE	BLACK	BLACK
M4-9bSL	30"	24"					FLUORESCENT ORANGE	BLACK	BLACK
M4-9bSR	30"	24"					FLUORESCENT ORANGE	BLACK	BLACK
M4-9bV	30"	24"					FLUORESCENT ORANGE	BLACK	BLACK

NOTES:

1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; AND THE 2017 MASSDOT STANDARD SIGNS BOOK, AS AMENDED.
2. ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.

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CAMBRIDGE
O'BRIEN HIGHWAY
SUGGESTED CONSTRUCTION STAGING
GENERAL NOTES
SHEET 79 OF 120

SUGGESTED CONSTRUCTION STAGING:

GENERAL NOTES:

1. THE CONTRACTOR SHALL DEVELOP ALL NECESSARY TEMPORARY TRAFFIC CONTROL DRAWINGS AND TRAFFIC ANALYSIS NEEDED TO COMPLETE THE WORK. ALL DOCUMENTS SHALL BE SUBMITTED, IN SUFFICIENT DETAIL SUCH THAT ALL MAINTENANCE OF TRAFFIC AND CONSTRUCTION MITIGATION ISSUES ARE PROPERLY ADDRESSED, TO THE ENGINEER, CITY OF CAMBRIDGE AND MASSDOT FOR REVIEW AND ACCEPTANCE.

   INFORMATION CONTAINED AND DEPICTED IN THE SUGGESTED CONSTRUCTION STAGING PLANS MAY BE USED AS A GUIDE TO PREPARE THE TEMPORARY TRAFFIC CONTROL PLANS FOR SUBMITTAL. THESE DRAWINGS MUST BE PREPARED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH OF MASSACHUSETTS. THE DESIGN SHALL BE IN CONFORMANCE WITH ALL CURRENT AND APPLICABLE REQUIREMENTS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE COMMONWEALTH OF MASSACHUSETTS HIGHWAY DEPARTMENT DESIGN MANUAL, CITY OF CAMBRIDGE STANDARDS, THE AMERICANS ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS, THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES AND THE RULES AND REGULATIONS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD.

   AT A MINIMUM, THE INFORMATION AND LEVEL OF DETAIL SHOWN IN THE CONTRACTOR'S CONSTRUCTION DRAWINGS SHALL INDICATE ALL TEMPORARY TRAFFIC CONTROL DEVICES, PAVEMENT MARKINGS, SIGNS, VARIABLE MESSAGE BOARDS, AND TRAFFIC SIGNAL DESIGN ELEMENTS NECESSARY TO MAINTAIN PUBLIC ACCESS AS ILLUSTRATED IN THE SUGGESTED CONSTRUCTION STAGING PLANS.

   THE CONTRACTOR SHALL SUBMIT ALL REQUIRED DRAWINGS FOR EACH STAGE OF CONSTRUCTION. GENERALLY, A NEW STAGE OF CONSTRUCTION WILL BE RECOGNIZED WHEN CHANGES IN VEHICULAR AND/OR PEDESTRIAN TRAFFIC FLOW CHARACTERISTICS ARE REQUIRED FOR THE CONTRACTOR TO DO THE WORK. SPECIFICALLY, A NEW STAGE WILL BE KNOWN TO EXIST WHEN THERE IS A CHANGE IN VEHICULAR OR PEDESTRIAN PATTERNS, ROADWAY OR INTERSECTION CONFIGURATION, NUMBER OF LANES, LANE UTILIZATION, ALLOWED VEHICULAR OR PEDESTRIAN MOVEMENTS, AVAILABLE STORAGE CAPACITY BETWEEN ADJACENT INTERSECTIONS, PROTECTION OF VEHICULAR AND PEDESTRIAN TRAFFIC AND ANY OTHER CHANCE IN CONDITIONS THAT EFFECTS PUBLIC ACCESS.

   THE CONTRACTOR'S DRAWINGS MUST DEPICT SURFACE CONDITIONS ANTICIPATED TO BE FOUND AT THE TIME WHICH THE PROPOSED WORK WILL BE PERFORMED AS A BASE CONDITION. THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL DRAWINGS SHALL CLEARLY SHOW THE FOLLOWING FOR EACH STAGE OF CONSTRUCTION: ALL PROPOSED VEHICULAR AND PEDESTRIAN TRAFFIC FLOW CHARACTERISTICS; ALL MEANS OF VEHICULAR, BICYCLE AND PEDESTRIAN TRAFFIC CONTROL AND PROTECTION; THE EXTENT OF THE CONTRACTOR WORK ZONES INCLUDING THE RESPECTIVE ACTIVITIES PROPOSED WITHIN EACH; THE POINT OF ACCESS/EGRESS FOR EACH WORK ZONE INCLUDING POINTS OF ACCESS/EGRESS TO PROPERTIES ADJACENT TO THE WORK; AND THE DISPOSITION OF THE ABOVE ITEMS, INCLUDING THE RESTORATION OF SURFACE FEATURES, AS THE EXISTING ENVIRONMENT CHANGES FROM ONE STAGE TO ANOTHER.

   THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO DEVELOP ALL REQUIRED TRAFFIC ANALYSIS TO SUPPORT THE DESIGN PROPOSED IN EACH STAGE IN ACCORDANCE WITH MASSDOT STANDARDS. ADDITIONALLY, THE CONTRACTOR SHALL SHOW THE ESTIMATED PERIOD OF TIME THAT EACH STAGE OF CONSTRUCTION WILL BE IN EFFECT, WHICH CORRESPONDS TO HIS APPROVED SCHEDULE. AS REQUESTED BY THE ENGINEER, THE CONTRACTOR SHALL SUBMIT ELECTRONIC DRAWING FILES OF THE CONSTRUCTION DRAWING SUBMITTALS AS WELL AS ANY TRAFFIC ANALYSIS PROGRAM FILES TO THE ENGINEER FOR THEIR USE.
2. STAGE 1A AND STAGE 1B IS PART OF THE GREEN LINE EXTENSION DESIGN-BUILD PROJECT AND THIS WORK IS BY OTHERS.
3. COORDINATE WITH PRIVATE UTILITY COMPANIES FOR RELOCATION OR INSTALLATION OF PRIVATE UTILITIES.
4. THE CONTRACTOR SHALL COORDINATE WITH THE MBTA AND E-ZRIDE TO FACILITATE BUS OPERATIONS DURING EACH CONSTRUCTION STAGE.
5. TEMPORARY PAVING WILL BE NECESSARY TO MAINTAIN TRAFFIC THROUGH CONSTRUCTION. CONTRACTOR SHALL MAINTAIN A PAVED SURFACE ON ALL SIDE STREETS AND DRIVEWAY ACCESS POINTS AT ALL TIMES. CONTRACTOR SHALL USE TEMP HMA PAVEMENT PATCHING FOR THIS WORK.
6. CONTRACTOR SHALL MAINTAIN ROADWAY DRAINAGE THROUGHOUT CONSTRUCTION.
7. CONTRACTOR SHALL COORDINATE WITH MASSDOT DISTRICT 6 AND CITY OF CAMBRIDGE PRIOR TO MODIFYING EXIST TRAFFIC SIGNAL TIMINGS DURING CONSTRUCTION. CONTRACTOR SHALL FURTHER MODIFY TRAFFIC SIGNAL TIMINGS ONLY AS DIRECTED BY THE ENGINEER.
8. CONTRACTOR SHALL MAINTAIN EXIST STREET LIGHTING AT EXISTING LIGHTING LEVELS OR PROVIDE TEMPORARY STREET LIGHTING AS NECESSARY DURING EACH CONSTRUCTION STAGE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
9. CONTRACTOR SHALL COORDINATE WITH THE CITY OF CAMBRIDGE FOR PROTECTION OF TREES AND ADJACENT AMENITIES THROUGHOUT THE PROJECT
10. CONTRACTOR SHALL PROVIDE ALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING BUT NOT LIMITED TO BARRIER, DRUMS, CONES, SIGNS, AND MARKINGS AS NECESSARY FOR EACH STAGE OF CONSTRUCTION.
11. CONTRACTOR SHALL UTILIZE THE TEMPORARY TRAFFIC CONTROL TYPICAL DETAILS ON SHEETS 73-76 AS POSSIBLE TO COMPLETE THE WORK WITHIN THE PUBLIC WAY.
12. CONTRACTOR SHALL MAINTAIN ABUTTER ACCESS AT ALL TIMES IN EACH STAGE OF CONSTRUCTION.
13. CONTRACTOR SHALL MAINTAIN 11' MIN TRAVEL LANES, 10' MIN TURN LANES, 7' MIN PARKING LANE, AND 5' MIN SIDEWALK AT ALL TIMES DURING EACH STAGE OF CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE ENGINEER.
14. DURING OFF-PEAK WORK HOURS, MAINTAIN A MINIMUM NUMBER OF LANES AS INDICATED BELOW ON THE EXISTING ROADWAYS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
    O'BRIEN HIGHWAY - 2 TRAVEL LANES IN EACH DIRECTION
    CAMBRIDGE STREET - 1 TRAVEL LANES (ALTERNATING TRAFFIC) IN EACH DIRECTION
    LAND BOULEVARD - 2 TRAVEL LANE IN EACH DIRECTION
    CHARLESTOWN AVENUE (GILMORE BRIDGE) - 1 TRAVEL LANE IN EACH DIRECTION
    WATER STREET - 1 TRAVEL LANE (ALTERNATING TRAFFIC) IN EACH DIRECTION
    GORE STREET - 1 TRAVEL LANE (ALTERNATING TRAFFIC) IN EACH DIRECTION
    EAST STREET - 1 TRAVEL LANE (ALTERNATING TRAFFIC) IN EACH DIRECTION
15. AT THE END OF EACH WORK SHIFT, CONTRACTOR SHALL REFRESH/REPLACE ALL CROSSWALKS AND STOP LINES THAT HAVE BEEN OBSCURED OR REMOVED.

STAGE 1A - GREEN LINE VIADUCT REMOVAL (BY OTHERS)

1. STAGE 1A IS PART OF THE GREEN LINE EXTENSION DESIGN-BUILD PROJECT AND THIS WORK IS BY OTHERS.

STAGE 1B - LECHMERE T STATION REMOVAL (BY OTHERS)

1. STAGE 1B IS PART OF THE GREEN LINE EXTENSION DESIGN-BUILD PROJECT AND THIS WORK IS BY OTHERS.

STAGE 2 - DRAINAGE OUTFALL (LECHMERE CANAL TO O'BRIEN HIGHWAY)

1. DRAINAGE OUTFALL WAS CONSTRUCTIONED UNDER PHASE 2A.

STAGE 3A - O'BRIEN HIGHWAY - CENTER MEDIAN REMOVAL [SHEET 80]

1. NON-CONFLICTING PORTIONS OF THIS STAGE(3A) MAY BE COMBINED WITH STAGES 1A & 1B.
2. EXCAVATE/REMOVE EXISTING MEDIANS ON O'BRIEN HIGHWAY AND TEMPORARILY PATCH/PAVE THESE AREAS TO ALLOW FOR TEMPORARY TRAFFIC CONTROL DURING SUBSEQUENT CONSTRUCTION OPERATIONS.
3. AS PORTIONS OF MEDIAN ARE REMOVED, DELINEATE ORIGINAL MEDIAN FOOTPRINT WITH REFLECTORIZED DRUMS.
4. THIS WORK WILL BE DONE USING TYPICAL SETUPS ON A DAILY BASIS. CONTRACTOR SHALL RESTORE ALL LANES FOR TRAVEL AT THE END OF EACH WORK SHIFT AND PEAK PERIODS.
5. PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES.

STAGE 3B - O'BRIEN HIGHWAY DRAINAGE AND UTILITIES [SHEET 81]

1. NON-CONFLICTING PORTIONS OF THIS STAGE MAY BE COMBINED WITH STAGES 1A AND/OR 1B
2. RETAIN REFLECTORIZED DRUM ISLANDS ON O'BRIEN HIGHWAY FROM STAGE 3A
3. CONSTRUCT DRAINAGE SYSTEM; TRAFFIC SIGNAL SYSTEM CONDUIT AND FOUNDATIONS; STREET LIGHT SYSTEM CONDUIT AND FOUNDATIONS; WATER SYSTEM ALTERATIONS; AND OTHER PUBLIC UNDERGROUND UTILITY ALTERATIONS OR ADJUSTMENTS.
4. CONSTRUCT PERMANENT ROADWAY PAVEMENT PATCHING IN MICROMILL & OVERLAY AREAS.
5. THIS WORK WILL BE DONE USING TYPICAL SETUPS ON A DAILY BASIS. CONTRACTOR SHALL RESTORE ALL LANES FOR TRAVEL AT THE END OF EACH WORK SHIFT.
6. PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES.

STAGE 3C - O'BRIEN HIGHWAY - NORTH FIRST STREET (BETWEEN O'BRIEN HIGHWAY AND CAMBRIDGE STREET) [SHEET 81]

1. RETAIN REFLECTORIZED DRUM ISLANDS ON O'BRIEN HIGHWAY FROM STAGE 3A.
2. COORDINATE WITH ADJACENT CONTRACTOR FOR GREEN LINE STATION CONSTRUCTION AS NEEDED.
3. CONSTRUCT DRAINAGE SYSTEM; TRAFFIC SIGNAL SYSTEM CONDUIT AND FOUNDATIONS; STREET LIGHT SYSTEM CONDUIT AND FOUNDATIONS; WATER SYSTEM ALTERATIONS; AND OTHER PUBLIC UNDERGROUND UTILITY ALTERATIONS OR ADJUSTMENTS.
4. CONSTRUCT EARTHWORK (EXCAVATION AND/OR FILL) AND FULL DEPTH PAVEMENT FOR NEW NORTH FIRST STREET TO INTERMEDIATE COURSE. THIS WORK WILL REQUIRE A FULL TIME WORK ZONE, WITH USE OF OPERATIONAL DETAILS ON THE PERIMETER OF THE WORK ZONE.
5. CONSTRUCT FULL DEPTH PAVEMENT FOR SOUTHWEST SIDE OF O'BRIEN HIGHWAY (BETWEEN GORE STREET AND CAMBRIDGE STREET) TO INTERMEDIATE COURSE.
6. EXIST SIDEWALK ADJACENT TO STAGE 3C WORK AREA WILL BE CLOSED TEMPORARILY. PEDESTRIANS WILL BE DETOURED TO OTHER SIDE AS SHOWN SCHEMATICALLY ON THE PLAN (SHEET 81) WITH TEMPORARY TRAFFIC CONTROL DEVICES INSTALLED AS PER TYPICAL PEDESTRIAN BYPASS TYPE II DETAIL (SHEET 76).
7. MAINTAIN BICYCLE LANE AND PEDESTRIAN ACCESS ALONG CAMBRIDGE STREET AT ALL TIMES DURING NON-WORKING HOURS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

STAGE 4 - FULL DEPTH CONSTRUCTION OF EAST SIDE OF O'BRIEN HIGHWAY- SOUTH OF EAST STREET [SHEET 82]

1. RETAIN REFLECTORIZED DRUM ISLANDS ON O'BRIEN HIGHWAY FROM STAGE 3A.
2. RETAIN FULL TIME WORK ZONE FROM STAGE 3C.
3. COORDINATE WITH ADJACENT CONTRACTOR FOR GREEN LINE STATION CONSTRUCTION AS NEEDED.
4. CONSTRUCT DRAINAGE SYSTEM; TRAFFIC SIGNAL SYSTEM CONDUIT AND FOUNDATIONS; STREET LIGHT SYSTEM CONDUIT AND FOUNDATIONS; WATER SYSTEM ALTERATIONS; AND OTHER PUBLIC UNDERGROUND UTILITY ALTERATIONS OR ADJUSTMENTS.
5. CONSTRUCT FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.
6. CONSTRUCT END-STATE CURB AND SIDEWALK ON N. FIRST STREET.
7. CONSTRUCT END-STATE CURB AND SIDEWALK ON THE SOUTH SIDE OF O'BRIEN HIGHWAY BETWEEN GORE ST AND CAMBRIDGE ST TO TIE-IN WITH THE N. FIRST ST ALIGNMENT.
8. EXIST SIDEWALK ADJACENT TO STAGE 4 WORK AREA WILL BE CLOSED TEMPORARILY. PEDESTRIANS WILL BE DETOURED TO OTHER SIDE AS SHOWN SCHEMATICALLY ON THE PLAN (SHEET 82) WITH TEMPORARY TRAFFIC CONTROL DEVICES INSTALLED AS PER TYPICAL PEDESTRIAN BYPASS TYPE II & III DETAILS (SHEET 76).
9. MAINTAIN BICYCLE LANE AND PEDESTRIAN ACCESS ALONG CAMBRIDGE STREET AT ALL TIMES DURING NON-WORKING HOURS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

STAGES 5A AND 5B - O'BRIEN HIGHWAY - INTERSECTION OF O'BRIEN HIGHWAY AND CAMBRIDGE STREET [SHEET 82 & 83]
RECONSTRUCTION OF N. FIRST STREET WITHIN PAVING LIMITS IN STAGE 5A [SHEET 82]

1. FOR STAGE 5A, RECONFIGURE REFLECTORIZED DRUM ISLANDS ON O'BRIEN HIGHWAY FROM STAGE 3A AS NEEDED TO ALLOW THE FOLLOWING MOVEMENTS:
   - 1.1 LEFT TURNING TRAFFIC FROM O'BRIEN HIGHWAY NORTHBOUND TO CAMBRIDGE STREET SHALL BE SHIFTED TO NORTH FIRST STREET
   - 1.2 LEFT TURNING TRAFFIC FROM CAMBRIDGE STREET EASTBOUND AND FIRST STREET NORTHBOUND TO O'BRIEN HIGHWAY SHALL BE SHIFTED TO NORTH FIRST STREET
   - 1.3 SOUTHBOUND TRAFFIC FROM EAST STREET TO CAMBRIDGE STREET WESTBOUND SHALL BE SHIFTED TO NORTH FIRST STREET
2. FOR STAGE 5B, RECONFIGURE REFLECTORIZED DRUM ISLANDS ON O'BRIEN HIGHWAY FROM STAGE 3A AS NEEDED TO ALLOW THE FOLLOWING MOVEMENTS:
   - 2.1 RESTORE ACCESS TO CAMBRIDGE STREET FROM O'BRIEN HIGHWAY AND FROM EAST STREET AT THE SIGNALIZED INTERSECTION.
   - 2.2 RIGHT TURNING TRAFFIC FROM CAMBRIDGE STREET EASTBOUND AND FIRST STREET NORTHBOUND TO O'BRIEN HIGHWAY SHALL BE SHIFTED TO NORTH FIRST STREET.
3. INSTALL TEMPORARY TRAFFIC SIGNAL CONTROL AS NEEDED USING END STATE EQUIPMENT AS POSSIBLE.
4. REMOVE EXISTING DELTA ISLANDS ON O'BRIEN HIGHWAY AT CAMBRIDGE STREET INTERSECTION WITHIN FIXED WORK ZONE AS POSSIBLE.
5. CONSTRUCT DRAINAGE SYSTEM; TRAFFIC SIGNAL SYSTEM CONDUIT AND FOUNDATIONS; STREET LIGHT SYSTEM CONDUIT AND FOUNDATIONS; WATER SYSTEM ALTERATIONS; AND OTHER PUBLIC UNDERGROUND UTILITY ALTERATIONS OR ADJUSTMENTS.
6. CONSTRUCT FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.
7. CONSTRUCT PROPOSED MEDIAN ISLAND IN INTERSECTION.
8. MICROMILL EXISTING PAVEMENT AS DESIGNATED ON THE PLANS.
9. CONSTRUCT PAVEMENT LEVELING COURSE.
10. FOR STAGE 5A WORK, RECONSTRUCTION OF NORTH FIRST STREET WITHIN PAVING LIMITS
11. EXIST SIDEWALK ADJACENT TO STAGE 5A WORK AREA WILL BE CLOSED TEMPORARILY. PEDESTRIANS WILL BE DETOURED AS SHOWN SCHEMATICALLY ON THE PLAN (SHEET 82) WITH TEMPORARY TRAFFIC CONTROL DEVICES INSTALLED AS PER TYPICAL PEDESTRIAN BYPASS TYPE II & III DETAILS (SHEET 76).

STAGE 6 - COMPLETE REMAINING WORK [SHEET 83]

1. ALL WORK TO BE COMPLETED UTILIZING DAILY TEMP TRAFFIC CONTROL SETUPS. CONTRACTOR SHALL RESTORE ALL LANES FOR TRAVEL AT THE END OF EACH WORK SHIFT AND PEAK PERIODS.
2. NUMBER OF TRAVEL LANES AND LANE USE FOR THE ENTIRE PROJECT SHALL BE PER END-STATE CONDITION

INTERSECTION RECONSTRUCTION

THE WORK BELOW SHALL BE PERFORMED FOR THE FOLLOWING INTERSECTIONS:

- O'BRIEN HIGHWAY AND THIRD STREET
- O'BRIEN HIGHWAY AND WATER STREET

1. CONSTRUCT DRAINAGE SYSTEM; TRAFFIC SIGNAL SYSTEM CONDUIT AND FOUNDATIONS; RELOCATE STREET LIGHTS AS DESIGNATED ON THE PLANS; WATER SYSTEM ADJUSTMENTS; AND OTHER PUBLIC UNDERGROUND UTILITY ALTERATIONS OR ADJUSTMENTS.
2. CONSTRUCT FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.
3. CONSTRUCT CURBING AND SIDEWALK.

O'BRIEN HIGHWAY - CURB, SEPARATED BICYCLE LANE AND SIDEWALK

1. CONSTRUCT CURBING, BIKE FACILITY AND SIDEWALK ALONG O'BRIEN HIGHWAY SOUTHBOUND.
2. CONSTRUCT CURBING, BIKE FACILITY AND SIDEWALK ALONG O'BRIEN HIGHWAY NORTHBOUND.

CAMBRIDGE STREET

1. CONSTRUCT FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.
2. CONSTRUCT CURBING AND SIDEWALK.

FIRST STREET

1. CONSTRUCT FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.
2. CONSTRUCT CURBING AND SIDEWALK.

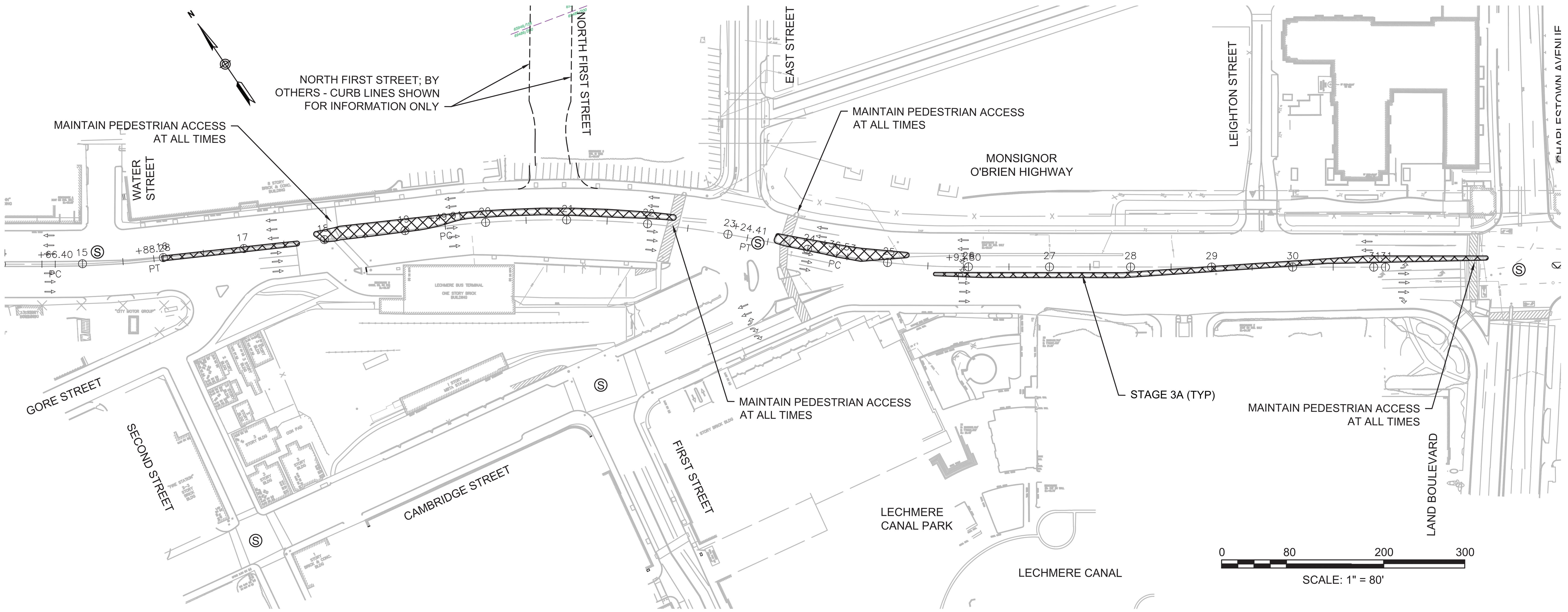
FINISH WORK

1. ADJUST PUBLIC UTILITY (DRAINAGE, WATER, SEWER) SYSTEM CASTINGS.
2. CONSTRUCT ANY REMAINING FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.
3. CONSTRUCT ANY REMAINING CURBING AND SIDEWALK.
4. CONSTRUCT REMAINING SEPARATED BICYCLE LANE.
5. MICROMILL ANY REMAINING EXISTING PAVEMENT AS DESIGNATED ON THE PLANS.
6. CONSTRUCT REMAINING PAVEMENT LEVELING COURSE, AS NEEDED.
7. CONSTRUCT LANDSCAPE AND STREETSCAPE ELEMENTS
8. CONSTRUCT ALL TRAFFIC SIGNAL SYSTEMS AND LIGHTING SYSTEMS.
9. CONSTRUCT TOP COURSE OF PAVEMENT.
10. INSTALL PAVEMENT MARKINGS AND SIGNS.
11. BICYCLE LANES TO BE INSTALLED UPON COMPLETION OF FINAL PAVEMENT COURSE INSTALLATION WITH FINAL PAVEMENT MARKINGS.
12. REMOVE TEMPORARY TRAFFIC CONTROL DEVICES.

CAMBRIDGE
O'BRIEN HIGHWAY
SUGGESTED CONSTRUCTION STAGING

SHEET 80 OF 120

11554-STAGE.DWG Plotted on 13-Jul-2021 12:12 PM


N
NORTH FIRST STREET; BY OTHERS - CURB LINES SHOWN FOR INFORMATION ONLY
NORTH FIRST STREET
MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES
WATER STREET
EAST STREET
MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES
MONSIGNOR O'BRIEN HIGHWAY
LEIGHTON STREET
CHARLESTOWN AVENUE
+66.40
15
PC
+88.28
PT
17
18
19
20
PC
21
22
23+24.41
PT
24+36.53
PC
25
+92.80
26
27
28
29
30
31
LECHMERE BUS TERMINAL ONE STORY BRICK BUILDING
GORE STREET
SECOND STREET
CAMBRIDGE STREET
FIRST STREET
MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES
STAGE 3A (TYP)
MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES
LAND BOULEVARD
LECHMERE CANAL PARK
LECHMERE CANAL
0
80
200
300
SCALE: 1" = 80'

STAGE 3A

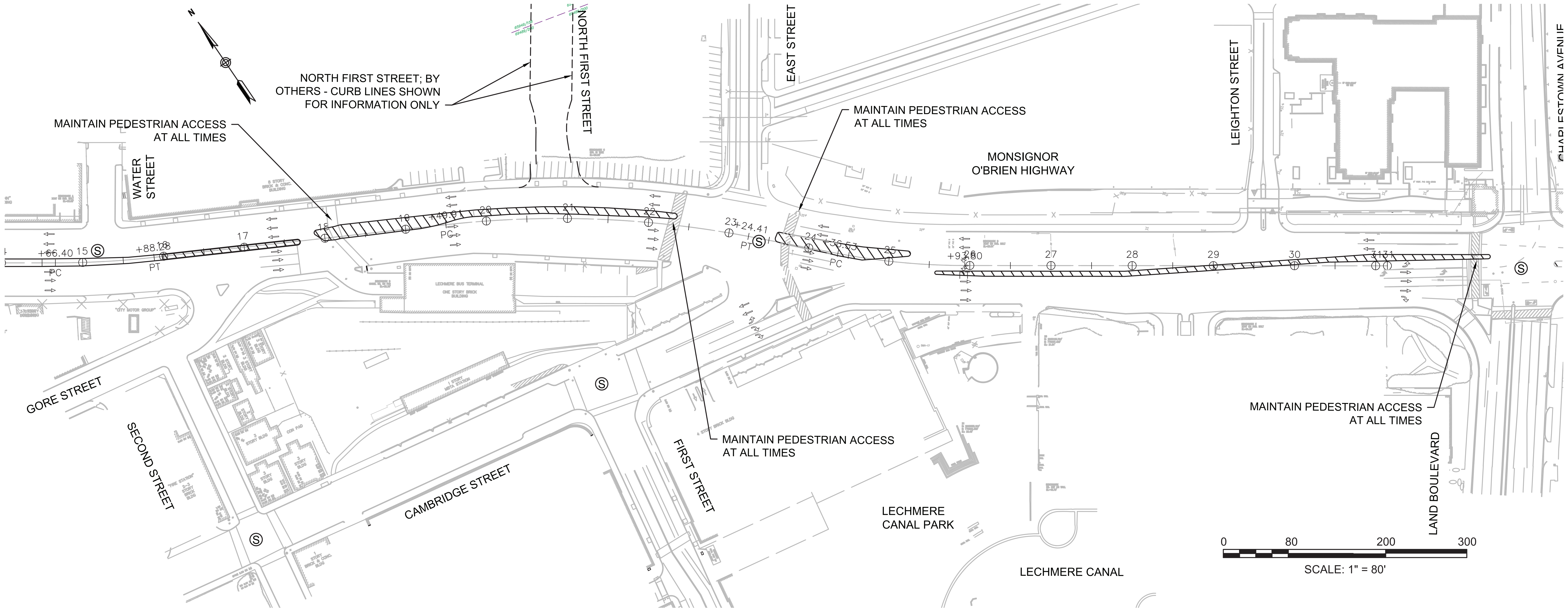
LEGEND

Ⓢ	EXISTING SIGNAL SYSTEM
▨	WORK ZONE FOR STAGED CONSTRUCTION

CAMBRIDGE
O'BRIEN HIGHWAY
SUGGESTED CONSTRUCTION STAGING

SHEET 81 OF 120

11554-STAGE.DWG Plotted on 13-Jul-2021 12:12 PM



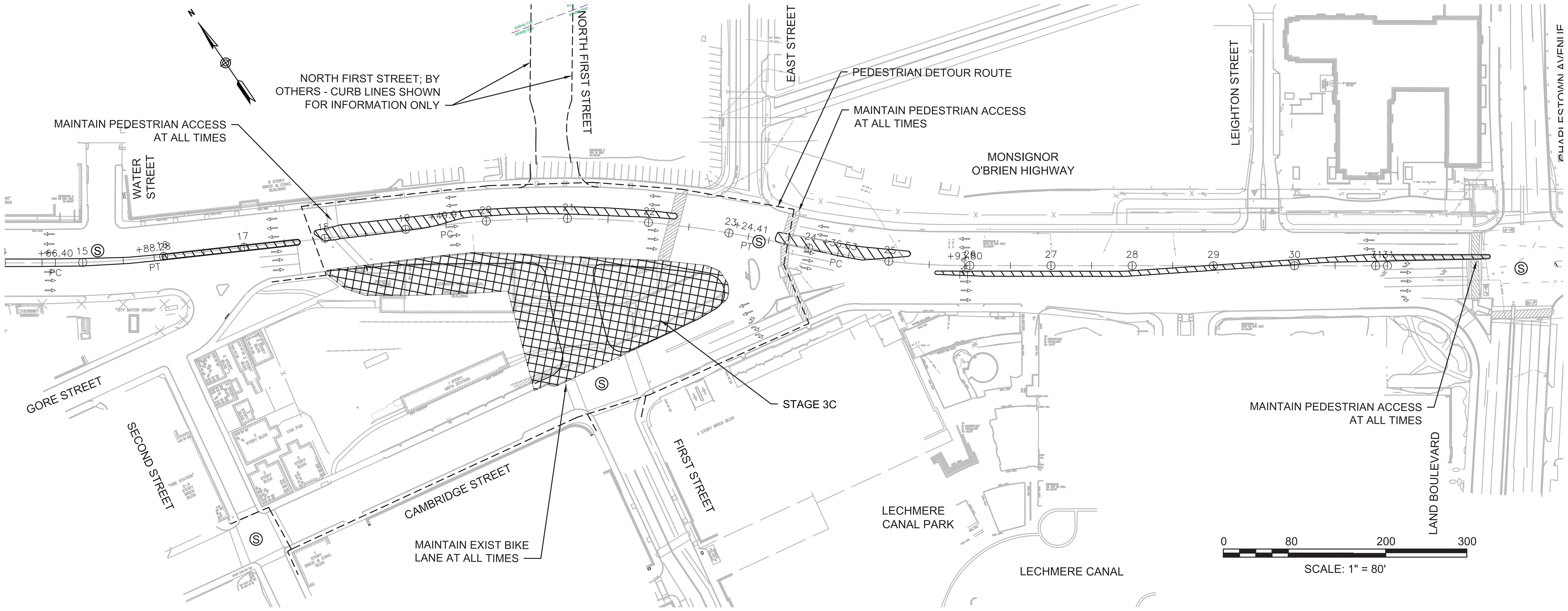
STAGE 3B

LEGEND

Ⓢ EXISTING SIGNAL SYSTEM

▩ WORK ZONE FOR STAGED CONSTRUCTION

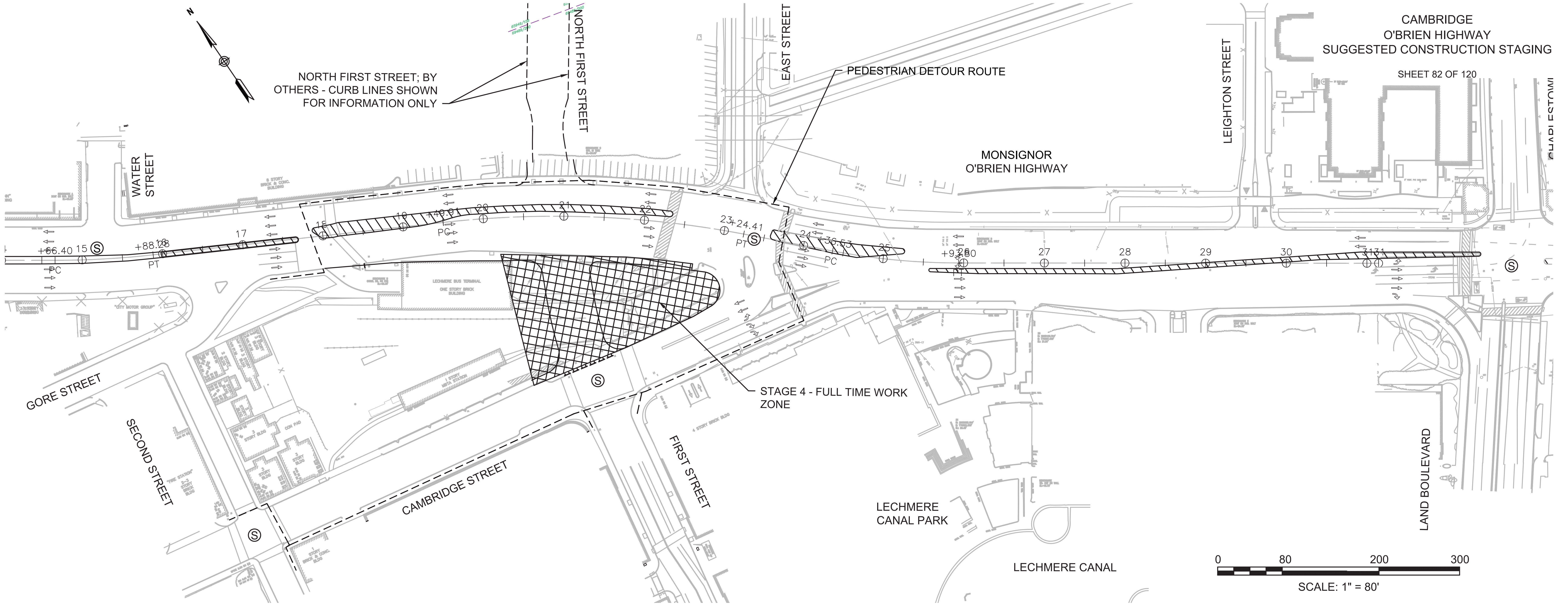
▨ NON-TRAFIC AREA



STAGE 3C

CAMBRIDGE
O'BRIEN HIGHWAY
SUGGESTED CONSTRUCTION STAGING

SHEET 82 OF 120



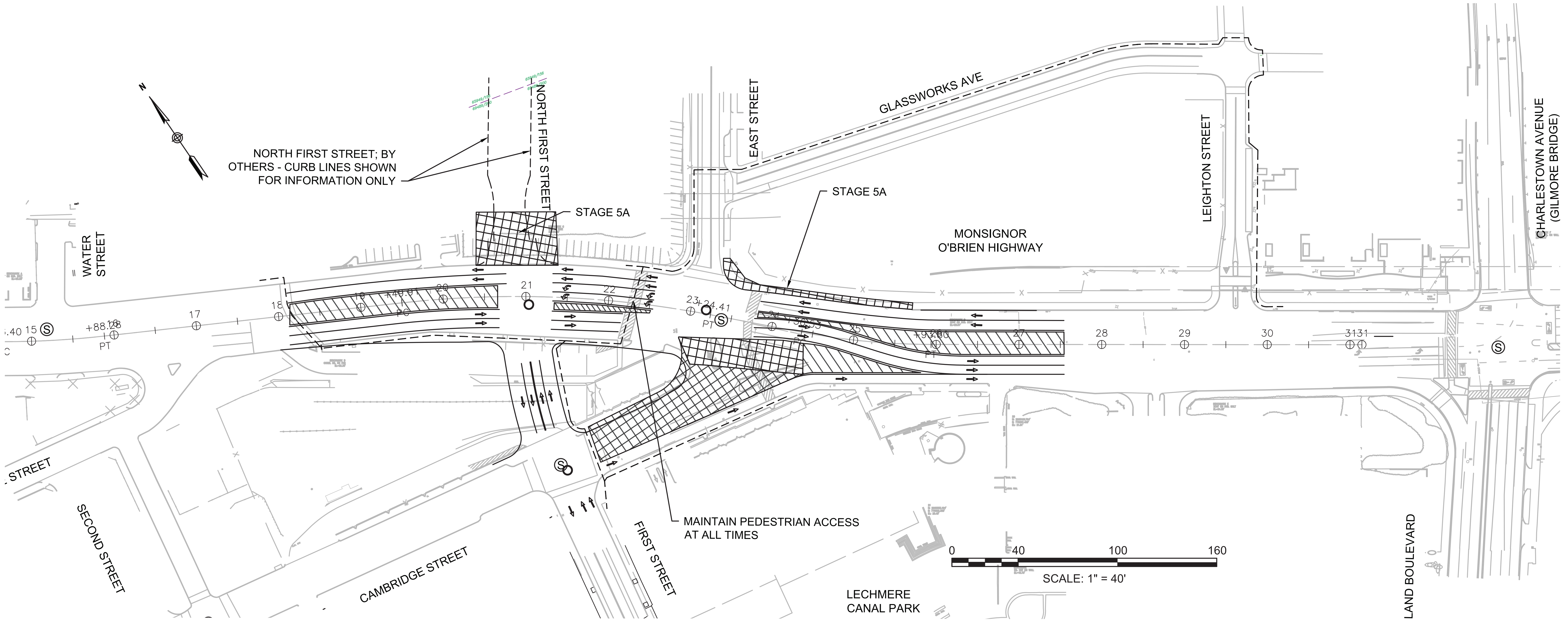
STAGE 4

LEGEND

Ⓢ	EXISTING SIGNAL SYSTEM
Ⓢ	TEMPORARY SIGNAL SYSTEM
▩	WORK ZONE FOR STAGED CONSTRUCTION
▨	NON-TRAFFIC AREA

NOTES:

1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL EQUIPMENT AS NEEDED USING END STATE EQUIPMENT AS POSSIBLE.
2. CLOSE EXIST BICYCLE LANE ON CAMBRIDGE STREET BETWEEN FIRST STREET AND O'BRIEN HIGHWAY BIKES TO SHARE THE ROAD.



STAGE 5A

11554-STAGE.DWG Plotted on 13-Jul-2021 12:12 PM

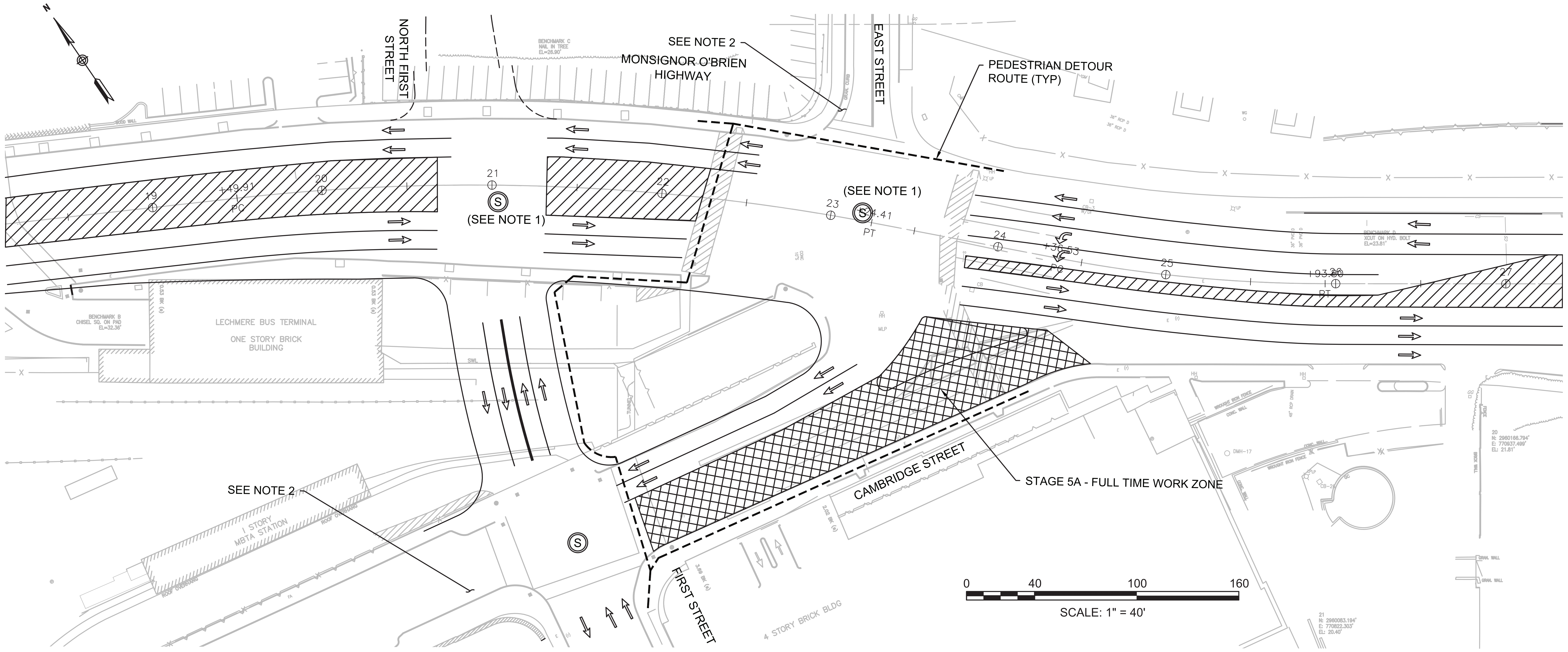
CAMBRIDGE
O'BRIEN HIGHWAY
SUGGESTED CONSTRUCTION STAGING
SUGGESTED CONSTRUCTION STAGING
SHEET 83 OF 120

LEGEND

Ⓢ	EXISTING SIGNAL SYSTEM
Ⓢ	TEMPORARY SIGNAL SYSTEM
▩	WORK ZONE FOR STAGED CONSTRUCTION
▨	NON-TRAFFIC AREA

NOTES:

1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL EQUIPMENT AS NEEDED USING END STATE EQUIPMENT AS POSSIBLE.
2. CLOSE EXIST BICYCLE LANE ON CAMBRIDGE STREET BETWEEN FIRST STREET AND O'BRIEN HIGHWAY BIKES TO SHARE THE ROAD.

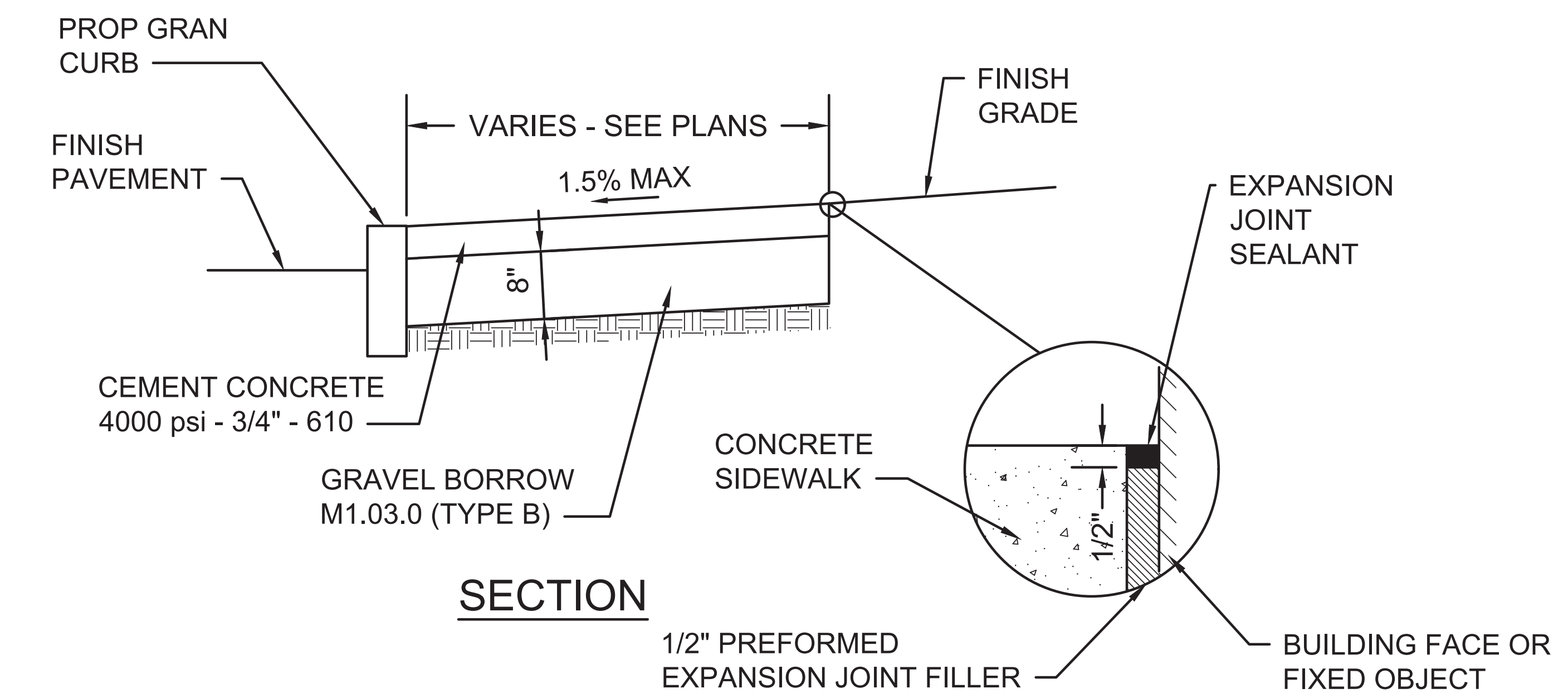


STAGE 5B

STAGE 6

CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION DETAILS
SHEET 84 OF 120

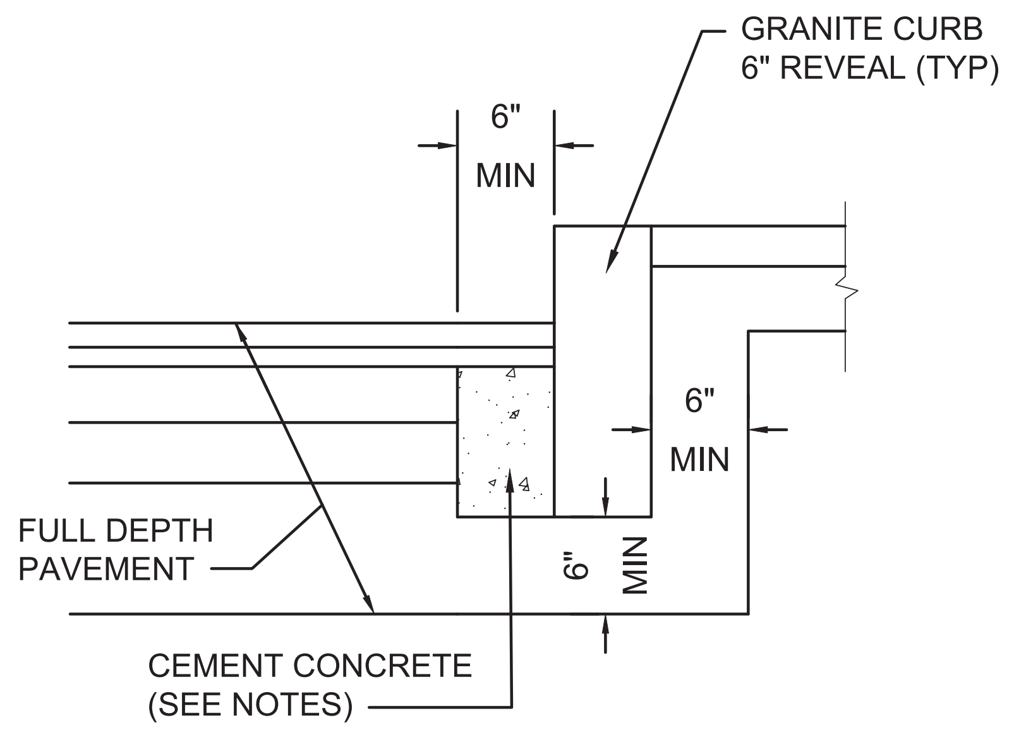
11554-DET.DWG   Plotted on 13-Jul-2021 12:13 PM


PROP GRAN CURB
FINISH PAVEMENT
VARIES - SEE PLANS
1.5% MAX
FINISH GRADE
EXPANSION JOINT SEALANT
8"
CEMENT CONCRETE 4000 psi - 3/4" - 610
GRAVEL BORROW M1.03.0 (TYPE B)
CONCRETE SIDEWALK
1/2"
1/2"
SECTION
1/2" PREFORMED EXPANSION JOINT FILLER
BUILDING FACE OR FIXED OBJECT

NOTES:
1. PROVIDE EXPANSION JOINTS AT MIN 30' O.C. WITH PRE-MOULDED JOINT FILLER
2. PROVIDE TOOLED DUMMY JOINTS AT MAX 5' O.C.
3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB

CEMENT CONCRETE SIDEWALK

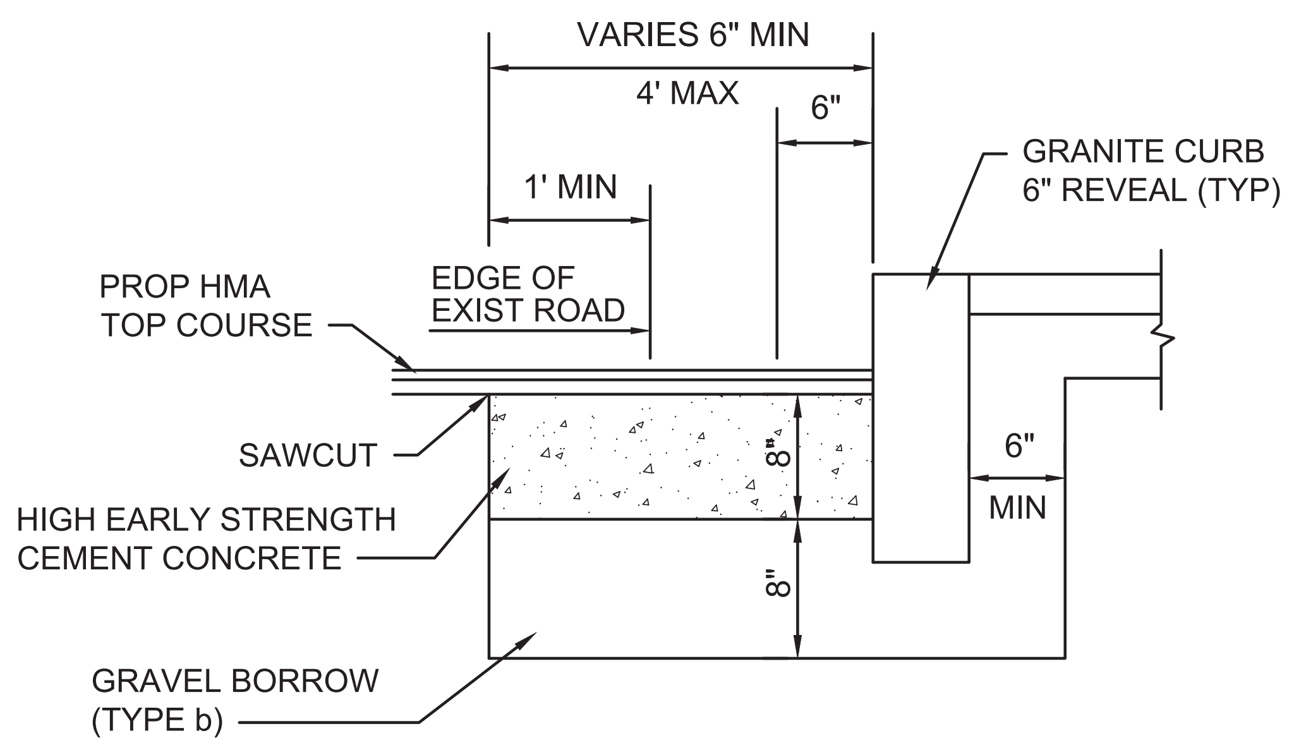
SCALE: N.T.S.



NOTES:
1. TO BE PLACED IF CURB IS INSTALLED AFTER HOT MIX ASPHALT
2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.

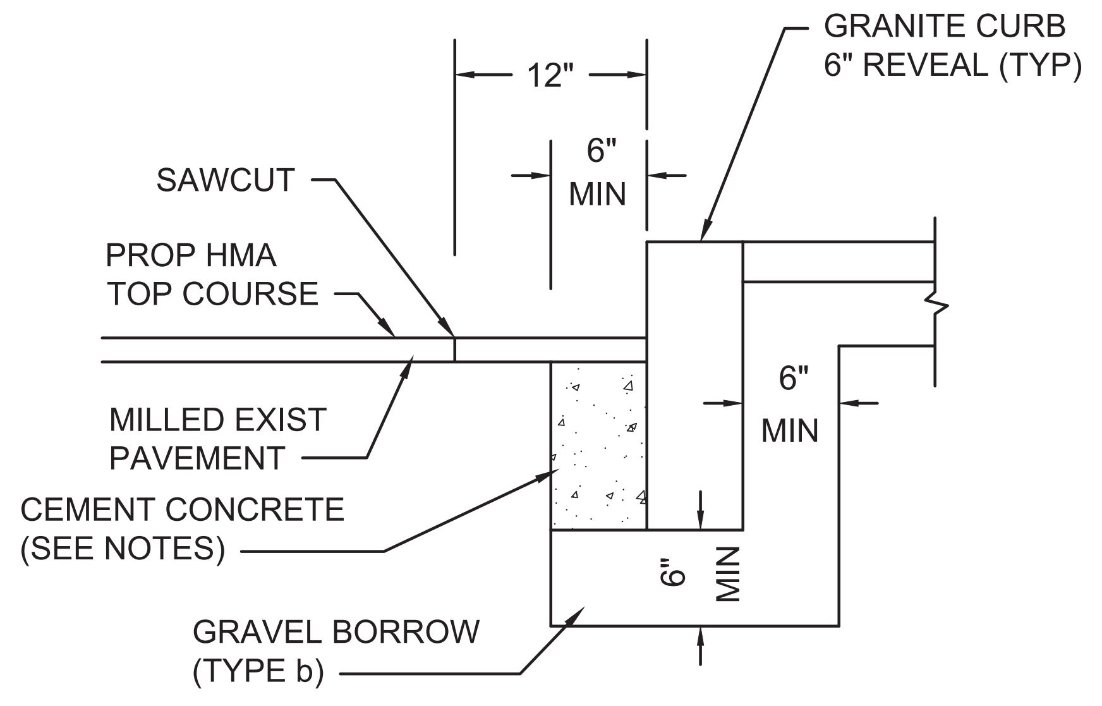
GRANITE CURB IN FULL DEPTH PAVEMENT

SCALE: N.T.S.



GRANITE CURB IN FULL DEPTH PAVEMENT LESS THAN 4' WIDE

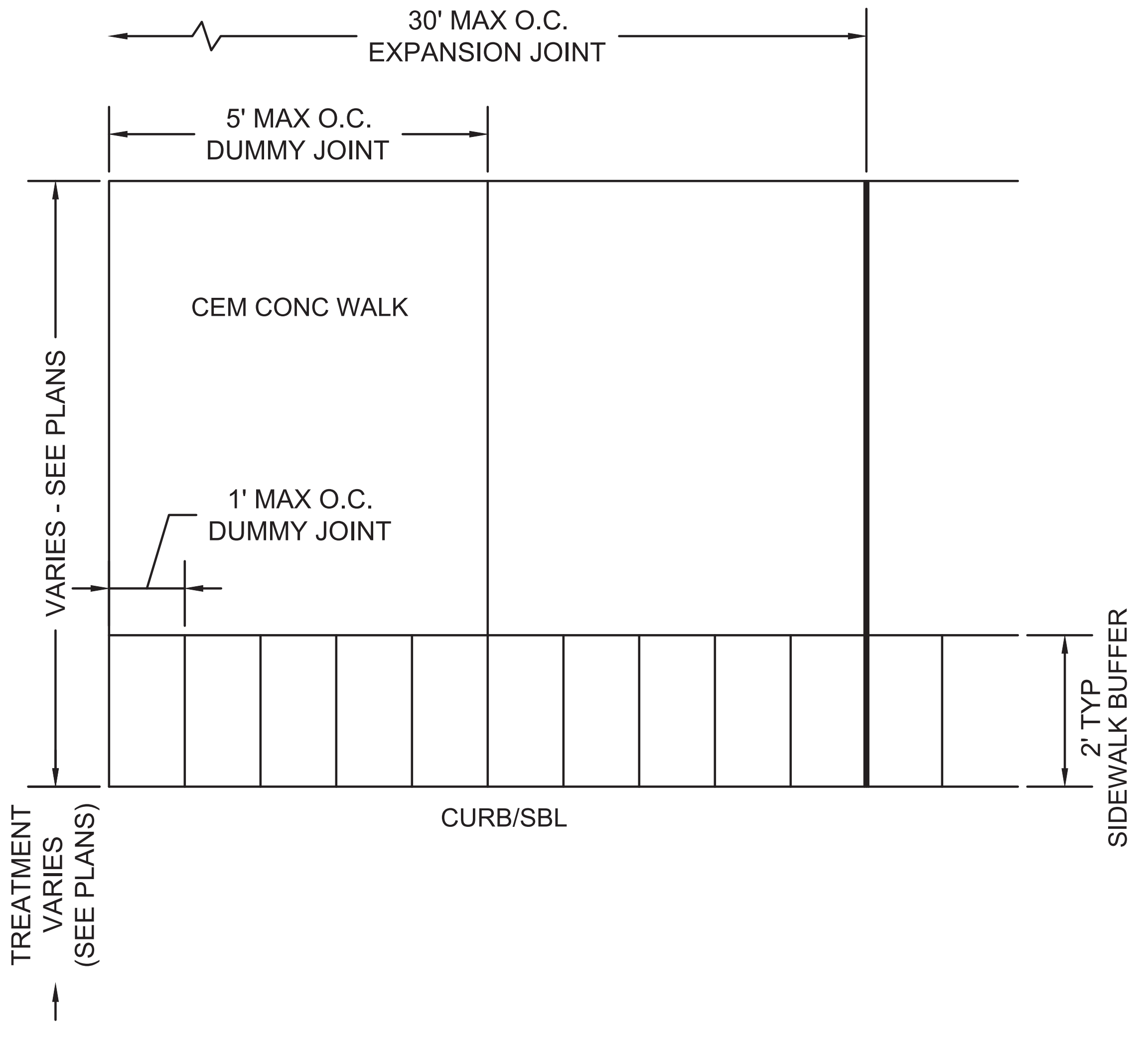
SCALE: N.T.S.



NOTES:
1. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB.
2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.

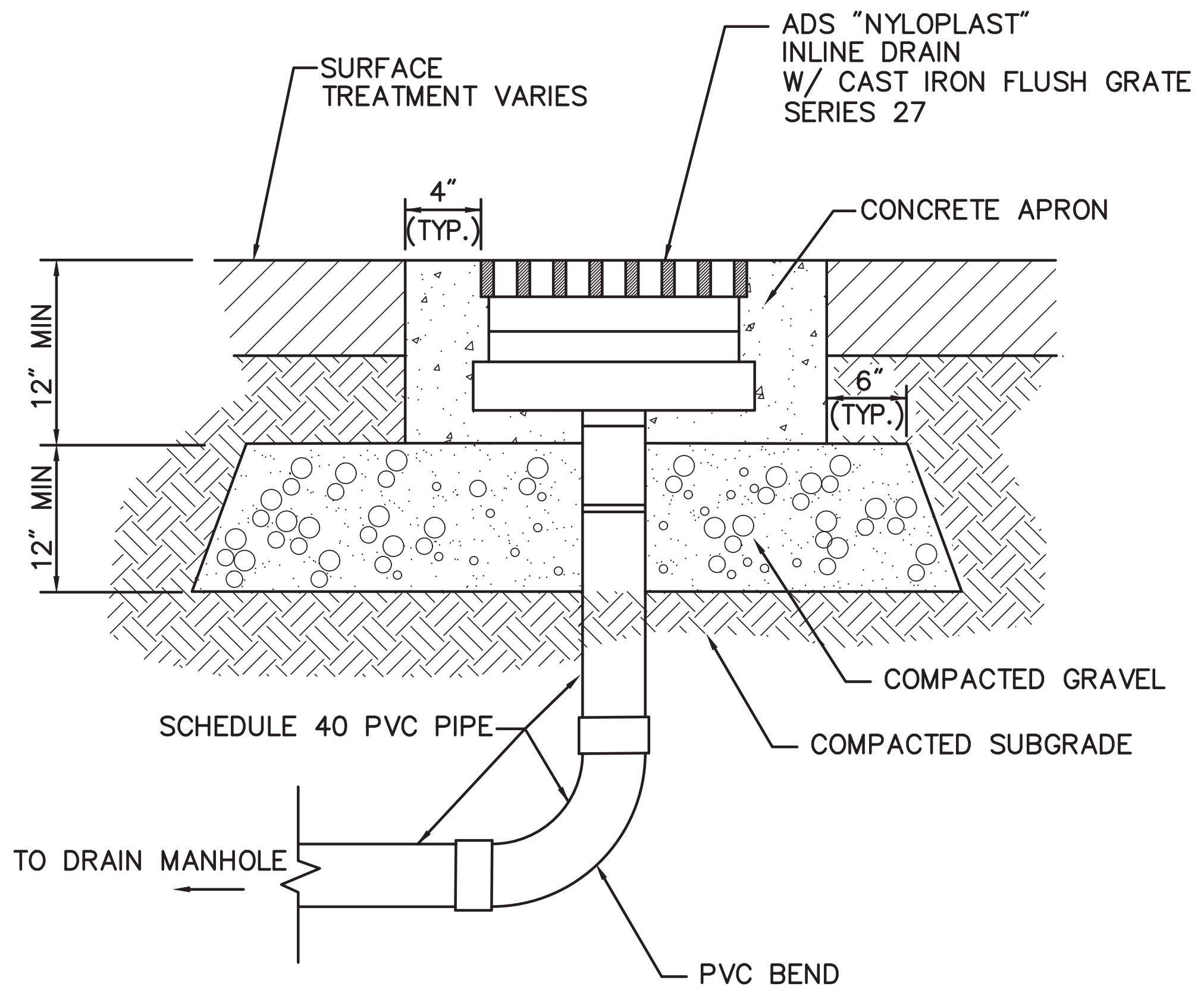
GRANITE CURB IN MILLED & OVERLAY PAVEMENT

SCALE: N.T.S.



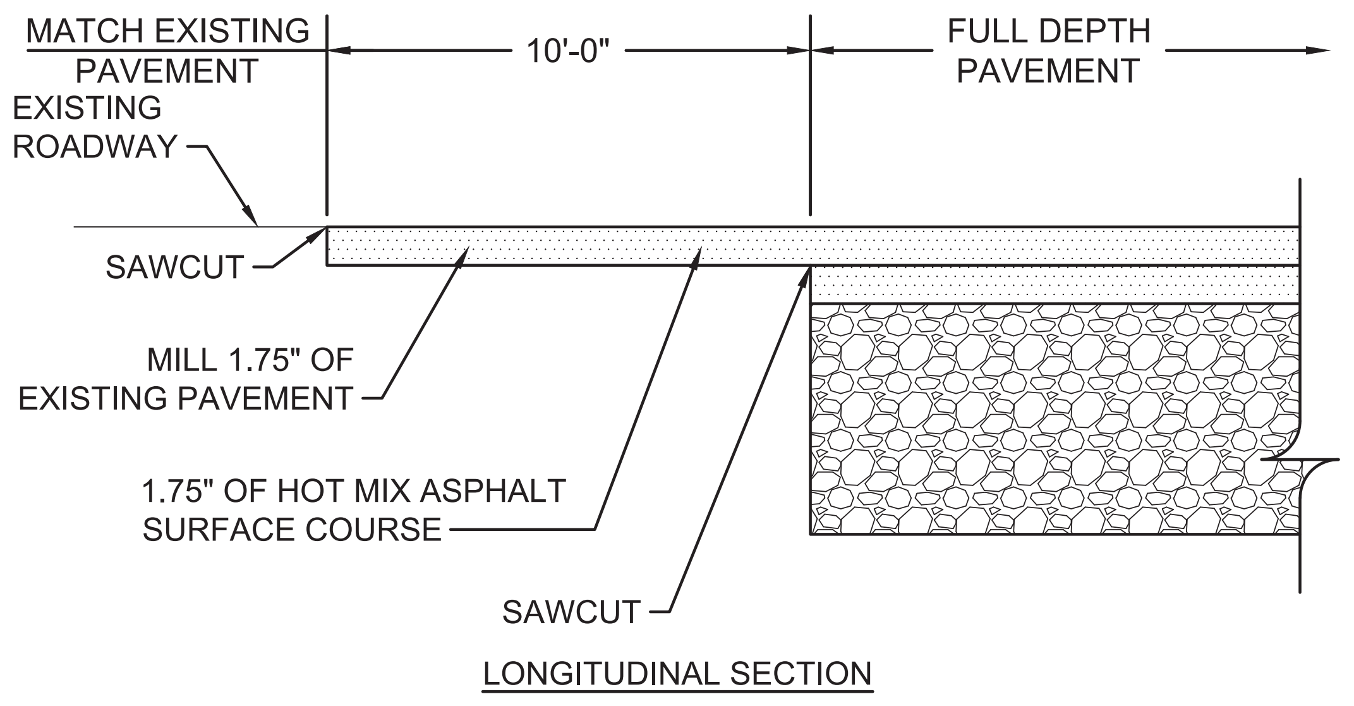
SIDEWALK BUFFER

SCALE: N.T.S.



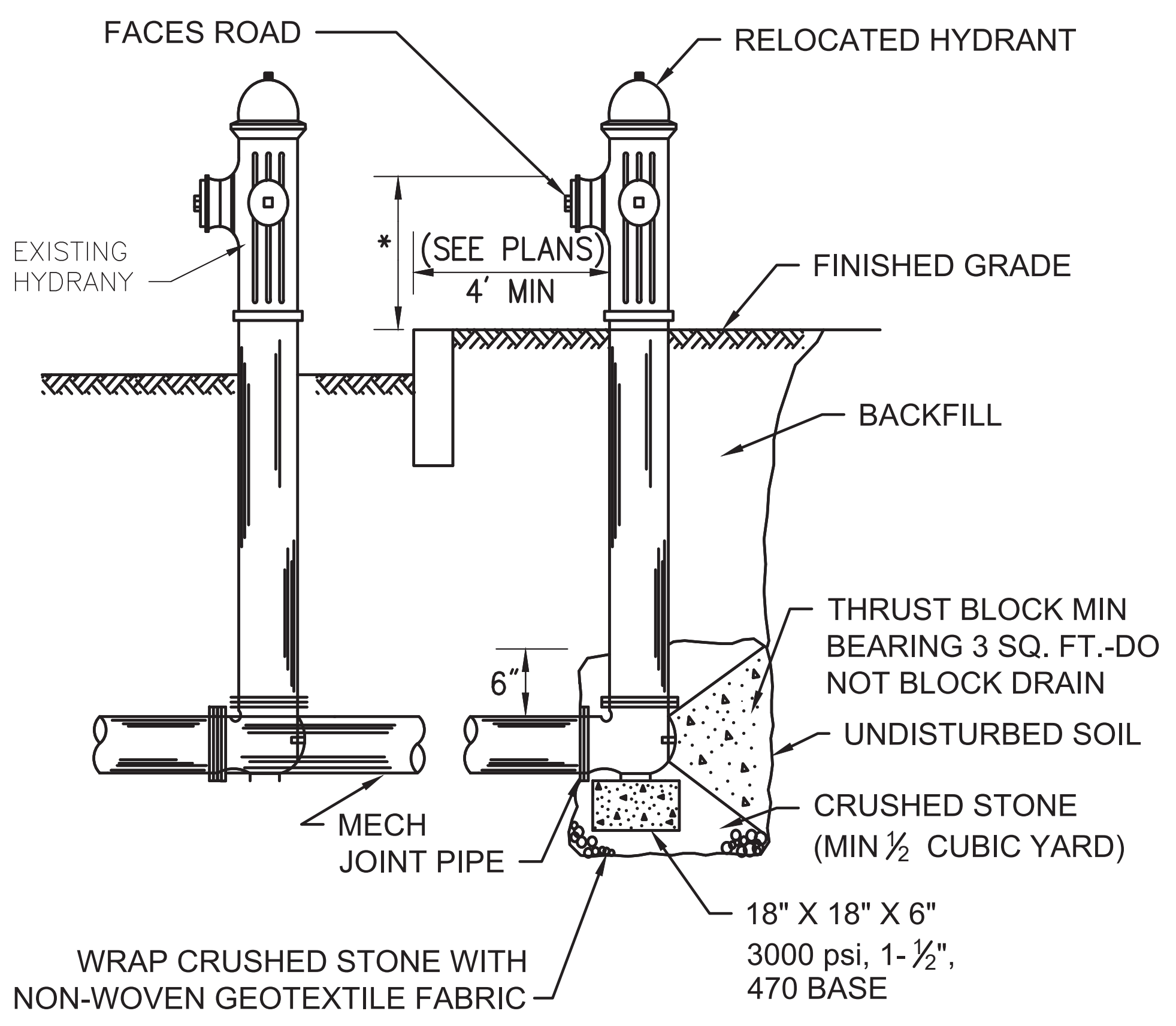
AREA DRAIN

SCALE: N.T.S.



FULL DEPTH PAVEMENT TRANSITION SIDE STREET LIMIT OF WORK

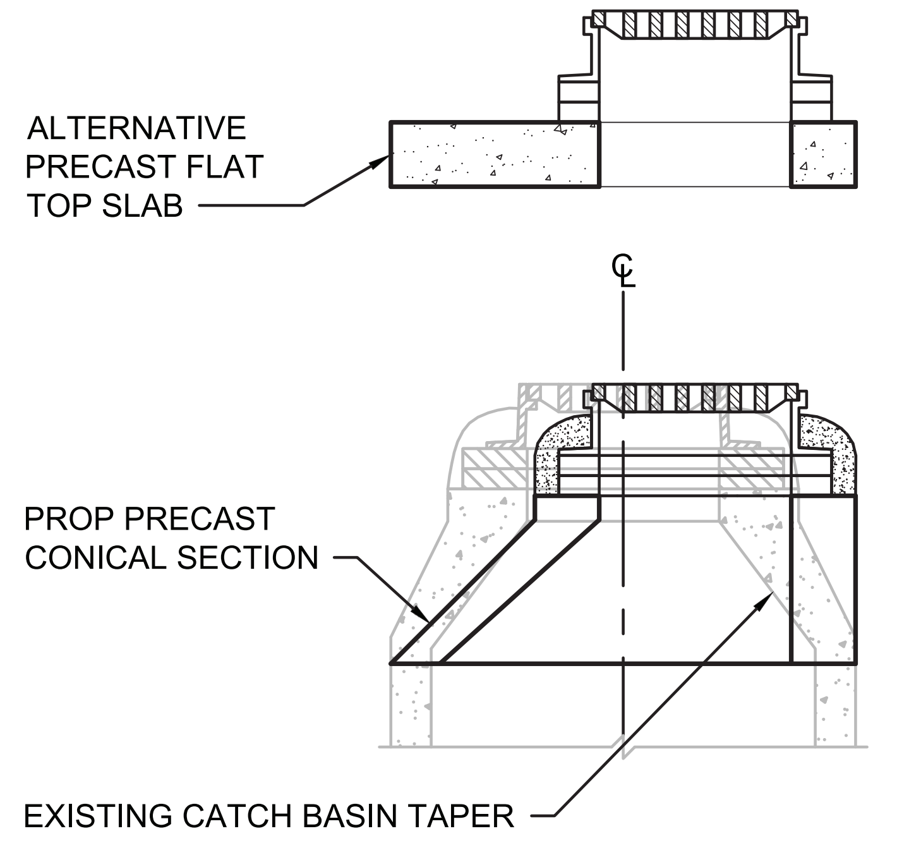
SCALE: N.T.S.


FACES ROAD
RELOCATED HYDRANT
EXISTING HYDRANY
*
(SEE PLANS)
4' MIN
FINISHED GRADE
BACKFILL
THRUST BLOCK MIN BEARING 3 SQ. FT.-DO NOT BLOCK DRAIN
6"
UNDISTURBED SOIL
MECH JOINT PIPE
CRUSHED STONE (MIN ½ CUBIC YARD)
18" X 18" X 6" 3000 psi, 1-½", 470 BASE
WRAP CRUSHED STONE WITH NON-WOVEN GEOTEXTILE FABRIC

HYDRANT RELOCATION

SCALE: NTS

CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION DETAILS
SHEET 85 OF 120

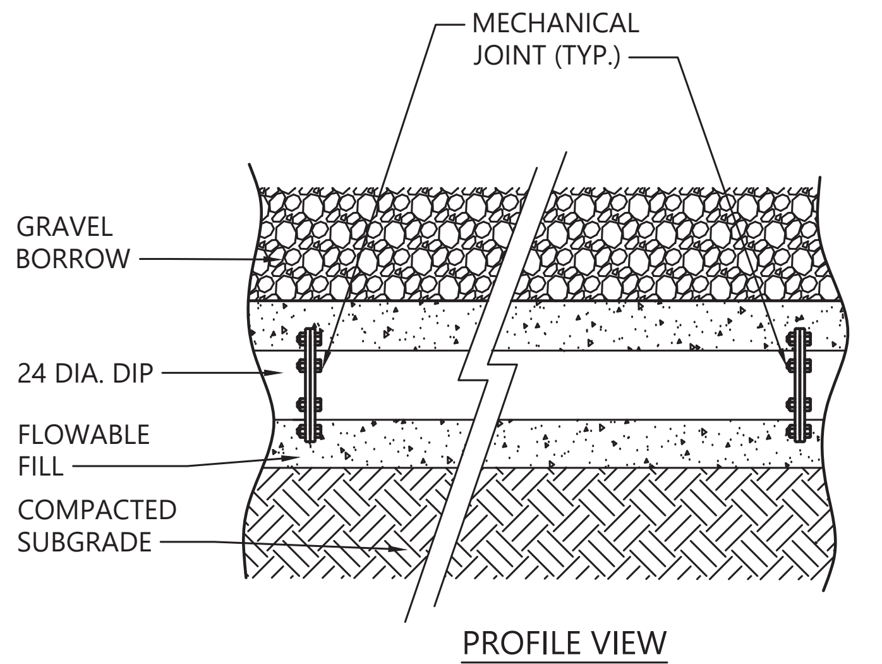

ALTERNATIVE PRECAST FLAT TOP SLAB
℄
PROP PRECAST CONICAL SECTION
EXISTING CATCH BASIN TAPER

CB TREATMENT NOTES

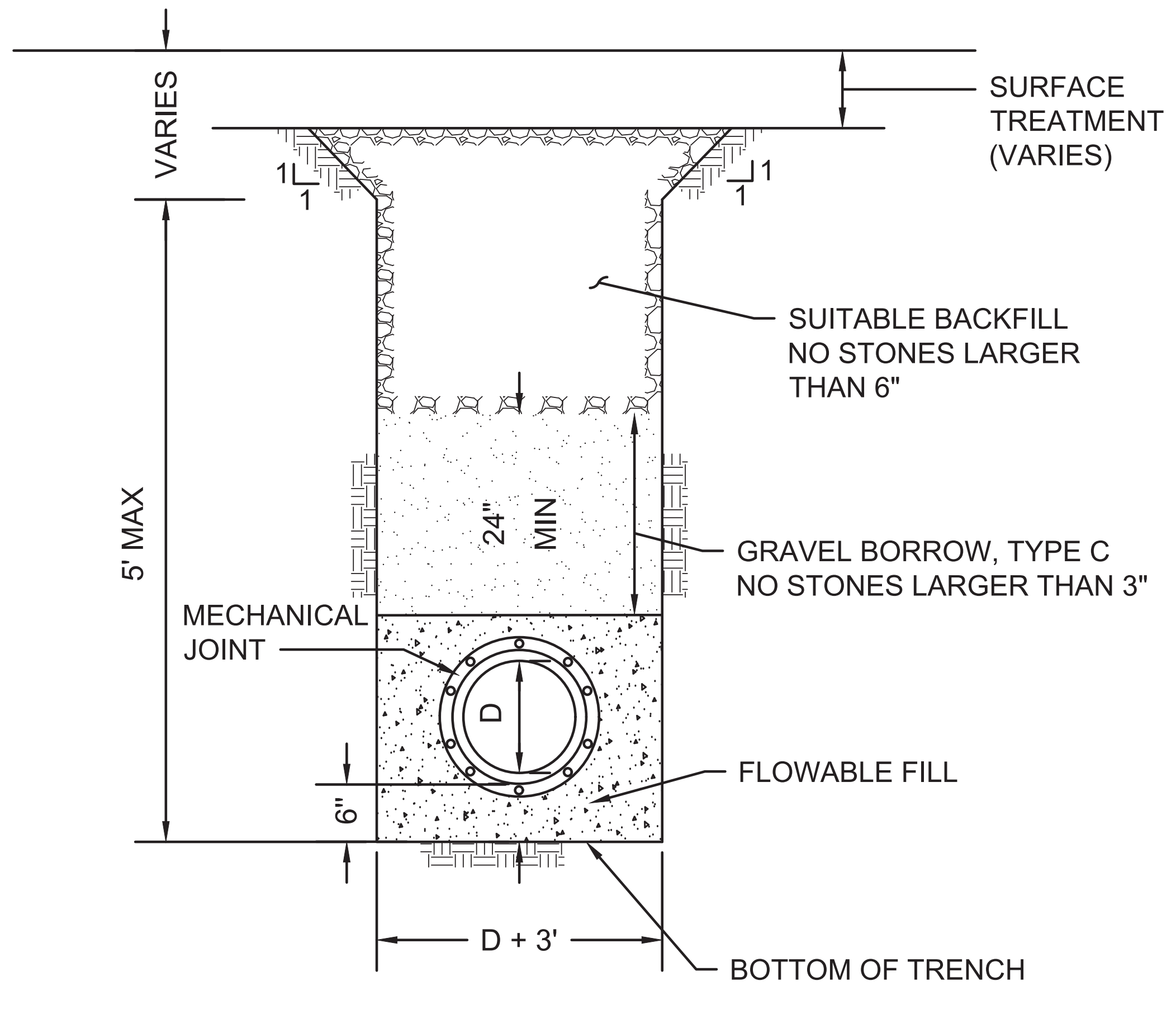
1. BASED ON ACTUAL FIELD CONDITIONS; THE CONTRACTOR SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.
2. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

CATCH BASIN REMODELED

SCALE: N.T.S.



PROFILE VIEW


VARIES
SURFACE TREATMENT (VARIES)
1
1
1
1
SUITABLE BACKFILL NO STONES LARGER THAN 6"
5' MAX
24" MIN
GRAVEL BORROW, TYPE C NO STONES LARGER THAN 3"
MECHANICAL JOINT
D
6"
FLOWABLE FILL
D + 3'
BOTTOM OF TRENCH

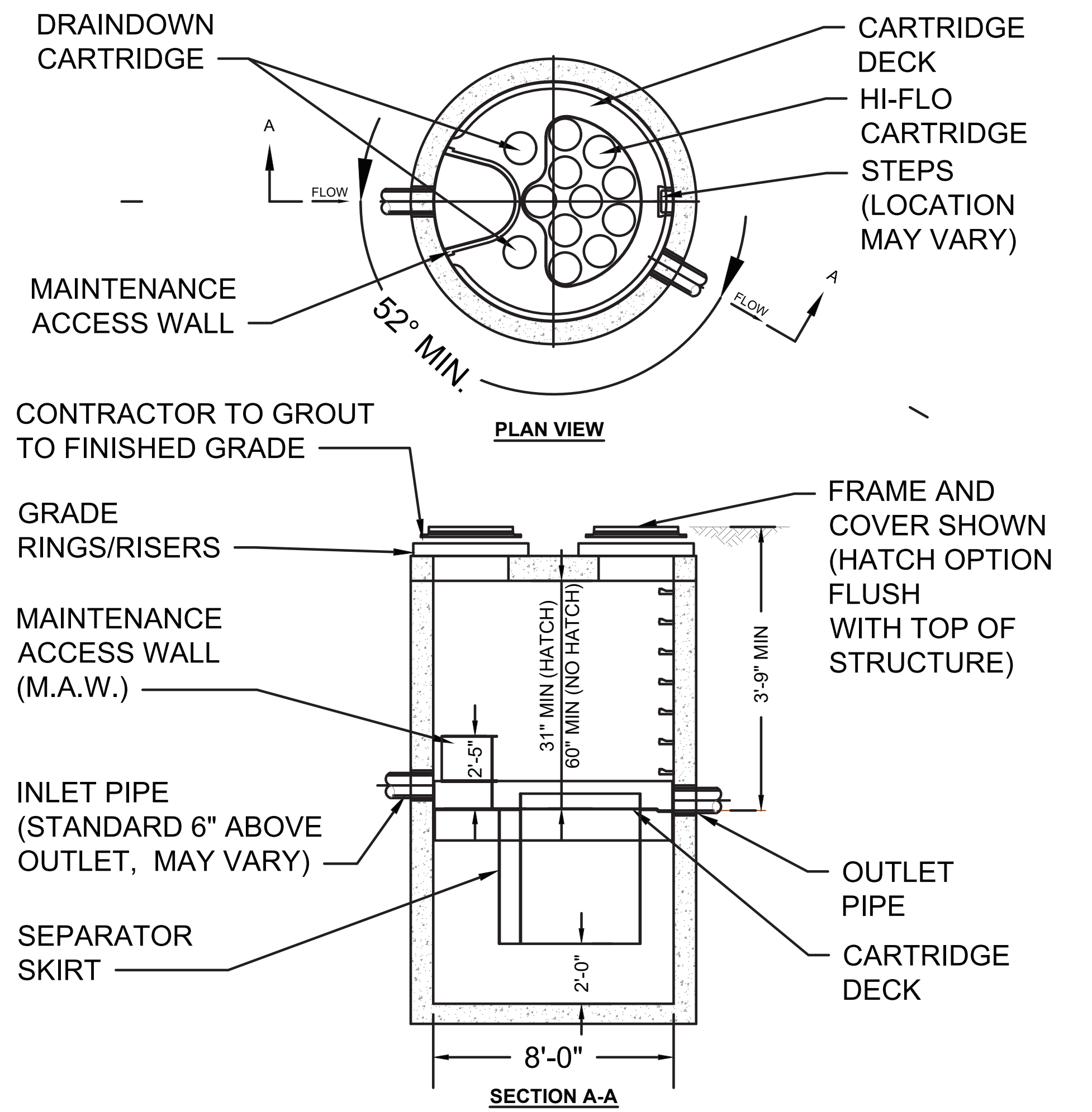
CROSS SECTION VIEW

NOTES

DRAINAGE PIPE WITH JOINT REINFORCEMENT AND FLOWABLE FILL

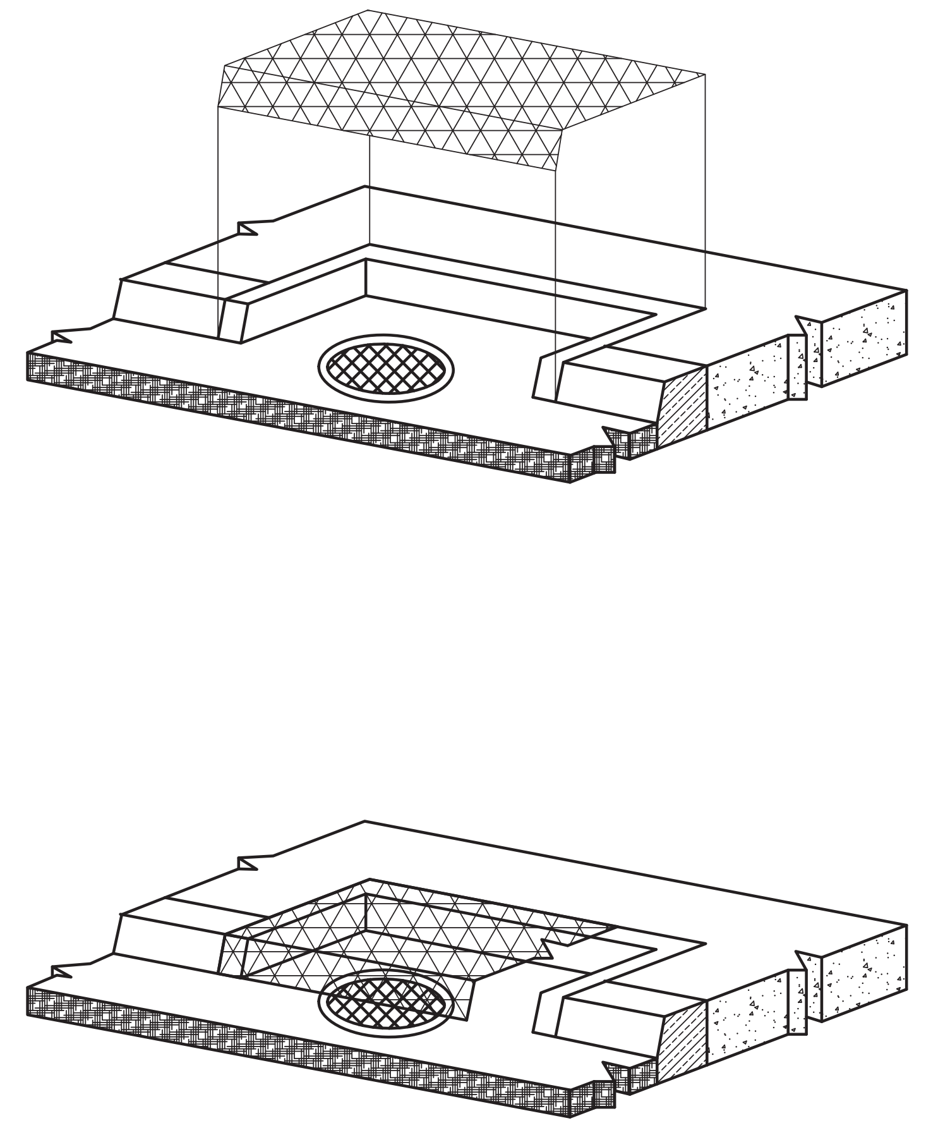
SCALE: NTS

DATE: SEPT 2020



CONTECH JELLYFISH FILTER - 8' DIAMETER

SCALE: N.T.S.

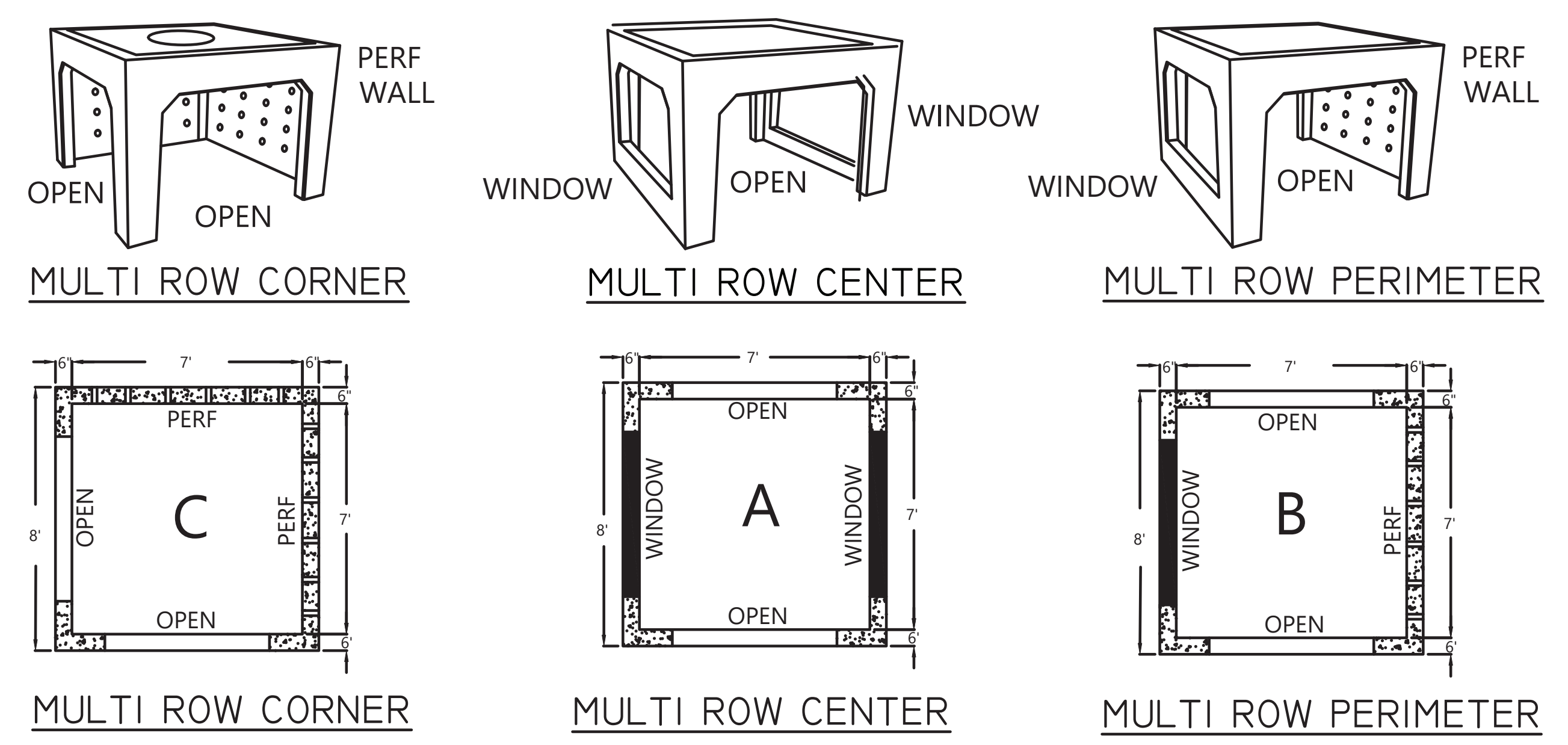


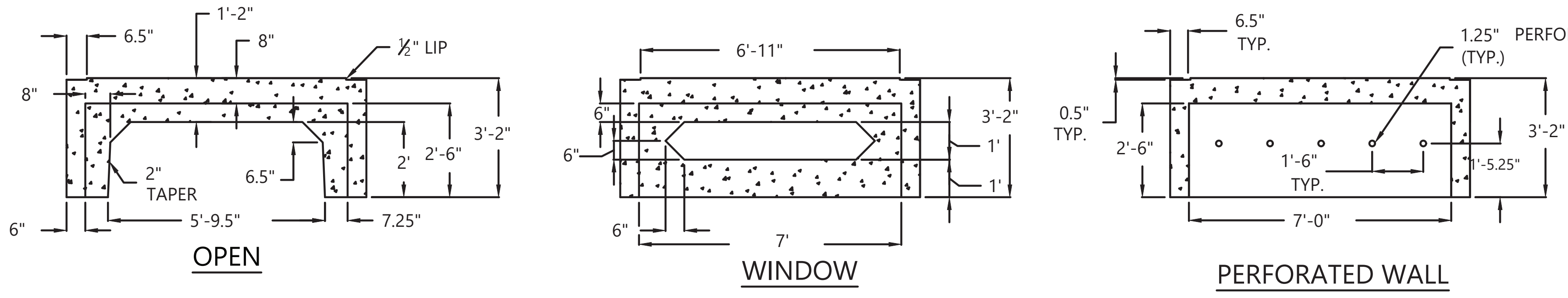
NOTES:

1. FRAME AND COVER TO BE GALVANIZED STEEL.
2. MATERIALS TO MEET OR EXCEED ASTM A-36.
3. COVER TO BE BOLTED DOWN STYLE.

CURB COVER

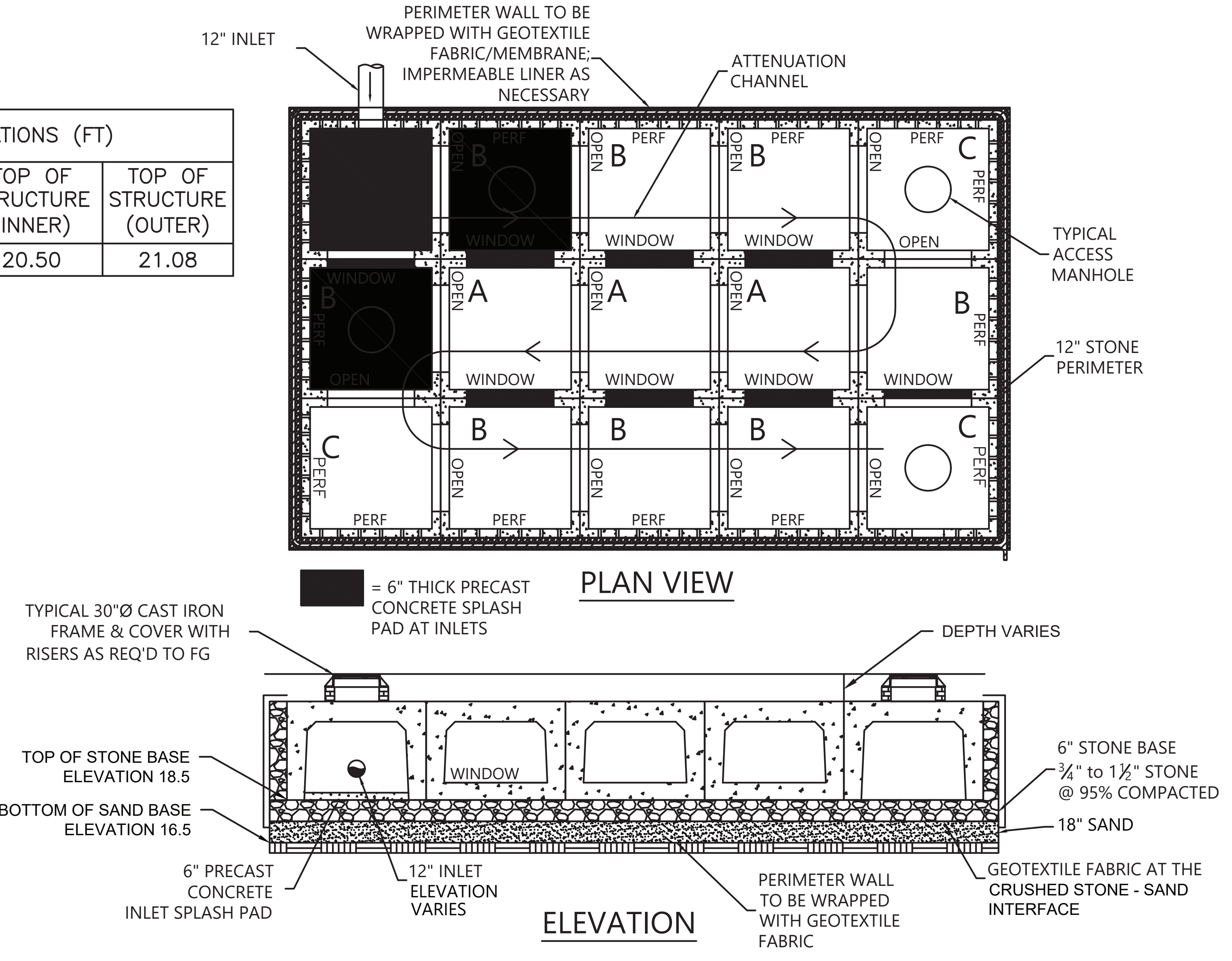
SCALE: N.T.S.





TYPICAL 2.5' UNIT DIMENSIONS

INFILTRATION GALLERY ELEVATIONS (FT)				
	BOTTOM OF STONE	TOP OF STONE	TOP OF STRUCTURE (INNER)	TOP OF STRUCTURE (OUTER)
BMP3	16.50	18.50	20.50	21.08


12" INLET
PERIMETER WALL TO BE WRAPPED WITH GEOTEXTILE FABRIC/MEMBRANE; IMPERMEABLE LINER AS NECESSARY
ATTENUATION CHANNEL
B
PERF
OPEN
B
PERF
OPEN
B
PERF
OPEN
PERF
C
PERF
WINDOW
WINDOW
WINDOW
OPEN
TYPICAL ACCESS MANHOLE
WINDOW
B
PERF
OPEN
OPEN
A
OPEN
A
OPEN
A
B
PERF
12" STONE PERIMETER
WINDOW
WINDOW
WINDOW
WINDOW
C
PERF
PERF
B
OPEN
PERF
B
OPEN
PERF
B
OPEN
PERF
C
OPEN
PERF
PLAN VIEW
= 6" THICK PRECAST CONCRETE SPLASH PAD AT INLETS
TYPICAL 30"Ø CAST IRON FRAME & COVER WITH RISERS AS REQ'D TO FG
DEPTH VARIES
TOP OF STONE BASE ELEVATION 18.5
BOTTOM OF SAND BASE ELEVATION 16.5
WINDOW
6" STONE BASE ¾" to 1½" STONE @ 95% COMPACTED
18" SAND
6" PRECAST CONCRETE INLET SPLASH PAD
12" INLET ELEVATION VARIES
PERIMETER WALL TO BE WRAPPED WITH GEOTEXTILE FABRIC
GEOTEXTILE FABRIC AT THE CRUSHED STONE - SAND INTERFACE
ELEVATION

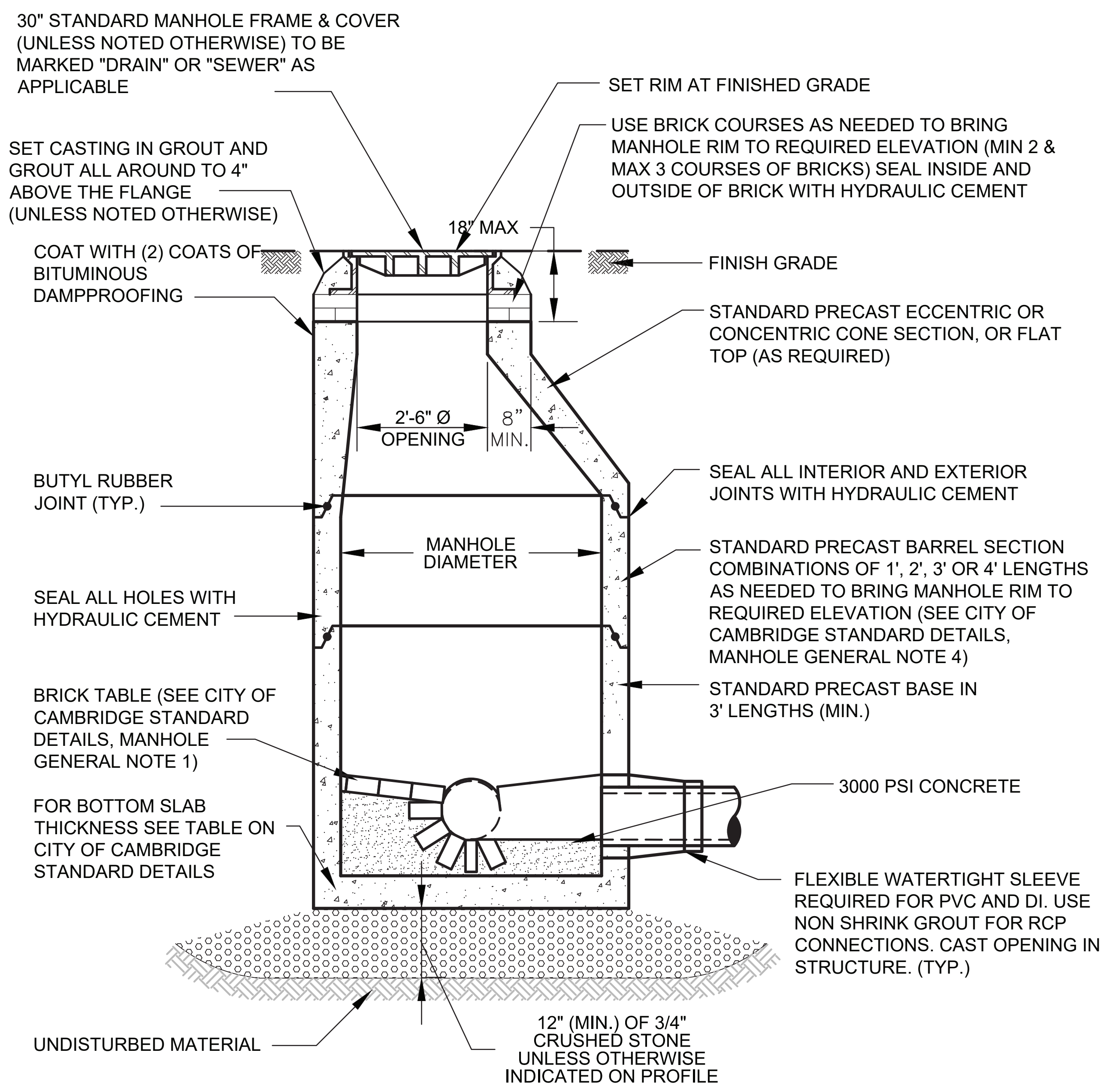
TYPICAL INFILTRATION

PRECAST MODULAR INFILTRATION SYSTEM

SCALE: N.T.S.

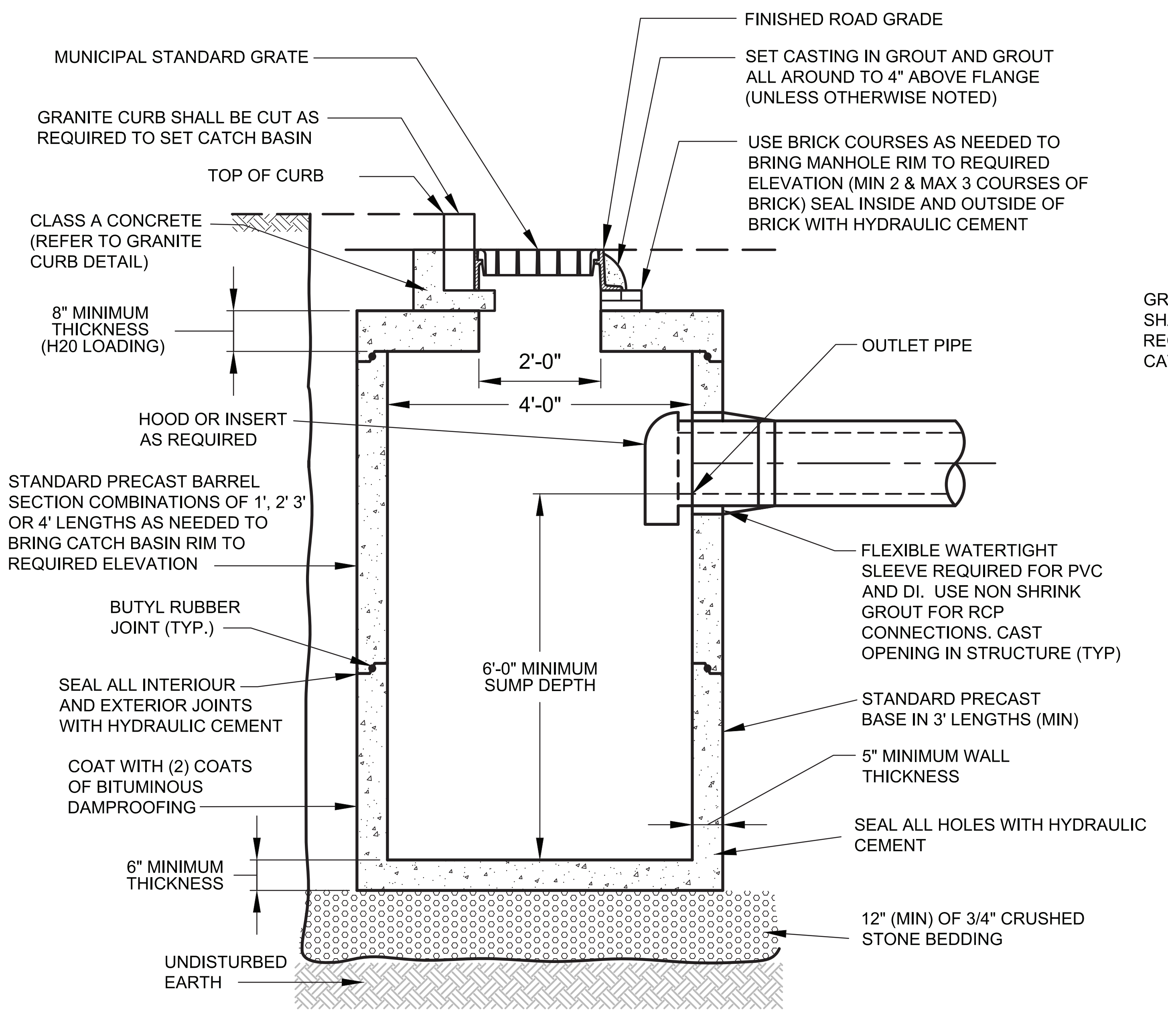
NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING. DIAMETER OF STRUCTURES SHALL BE COORDINATED WITH PIPE CONFIGURATIONS.
2. GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED UNDER BEDDING MATERIAL WHEN GROUNDWATER IS ENCOUNTERED.

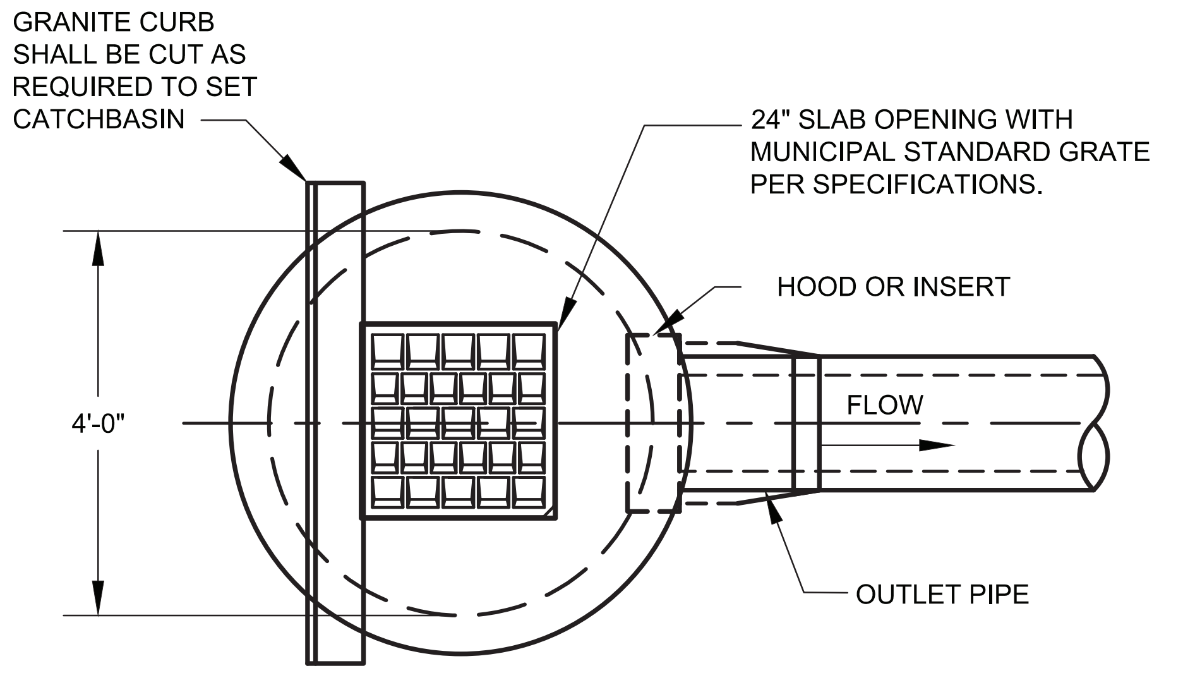

30" STANDARD MANHOLE FRAME & COVER (UNLESS NOTED OTHERWISE) TO BE MARKED "DRAIN" OR "SEWER" AS APPLICABLE
SET RIM AT FINISHED GRADE
USE BRICK COURSES AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (MIN 2 & MAX 3 COURSES OF BRICKS) SEAL INSIDE AND OUTSIDE OF BRICK WITH HYDRAULIC CEMENT
SET CASTING IN GROUT AND GROUT ALL AROUND TO 4" ABOVE THE FLANGE (UNLESS NOTED OTHERWISE)
18" MAX
COAT WITH (2) COATS OF BITUMINOUS DAMPPROOFING
FINISH GRADE
STANDARD PRECAST ECCENTRIC OR CONCENTRIC CONE SECTION, OR FLAT TOP (AS REQUIRED)
2'-6" Ø OPENING
8" MIN.
BUTYL RUBBER JOINT (TYP.)
SEAL ALL INTERIOR AND EXTERIOR JOINTS WITH HYDRAULIC CEMENT
MANHOLE DIAMETER
SEAL ALL HOLES WITH HYDRAULIC CEMENT
STANDARD PRECAST BARREL SECTION COMBINATIONS OF 1', 2', 3' OR 4' LENGTHS AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (SEE CITY OF CAMBRIDGE STANDARD DETAILS, MANHOLE GENERAL NOTE 4)
STANDARD PRECAST BASE IN 3' LENGTHS (MIN.)
BRICK TABLE (SEE CITY OF CAMBRIDGE STANDARD DETAILS, MANHOLE GENERAL NOTE 1)
3000 PSI CONCRETE
FOR BOTTOM SLAB THICKNESS SEE TABLE ON CITY OF CAMBRIDGE STANDARD DETAILS
FLEXIBLE WATERTIGHT SLEEVE REQUIRED FOR PVC AND DI. USE NON SHRINK GROUT FOR RCP CONNECTIONS. CAST OPENING IN STRUCTURE. (TYP.)
UNDISTURBED MATERIAL
12" (MIN.) OF 3/4" CRUSHED STONE UNLESS OTHERWISE INDICATED ON PROFILE

DRAIN MANHOLE (DMH) - CITY OF CAMBRIDGE

SCALE: N.T.S.


MUNICIPAL STANDARD GRATE
GRANITE CURB SHALL BE CUT AS REQUIRED TO SET CATCH BASIN
TOP OF CURB
CLASS A CONCRETE (REFER TO GRANITE CURB DETAIL)
8" MINIMUM THICKNESS (H20 LOADING)
HOOD OR INSERT AS REQUIRED
STANDARD PRECAST BARREL SECTION COMBINATIONS OF 1', 2' 3' OR 4' LENGTHS AS NEEDED TO BRING CATCH BASIN RIM TO REQUIRED ELEVATION
BUTYL RUBBER JOINT (TYP.)
SEAL ALL INTERIOUR AND EXTERIOR JOINTS WITH HYDRAULIC CEMENT
COAT WITH (2) COATS OF BITUMINOUS DAMPROOFING
6" MINIMUM THICKNESS
UNDISTURBED EARTH
FINISHED ROAD GRADE
SET CASTING IN GROUT AND GROUT ALL AROUND TO 4" ABOVE FLANGE (UNLESS OTHERWISE NOTED)
USE BRICK COURSES AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (MIN 2 & MAX 3 COURSES OF BRICK) SEAL INSIDE AND OUTSIDE OF BRICK WITH HYDRAULIC CEMENT
2'-0"
4'-0"
OUTLET PIPE
FLEXIBLE WATERTIGHT SLEEVE REQUIRED FOR PVC AND DI. USE NON SHRINK GROUT FOR RCP CONNECTIONS. CAST OPENING IN STRUCTURE (TYP)
6'-0" MINIMUM SUMP DEPTH
STANDARD PRECAST BASE IN 3' LENGTHS (MIN)
5" MINIMUM WALL THICKNESS
SEAL ALL HOLES WITH HYDRAULIC CEMENT
12" (MIN) OF 3/4" CRUSHED STONE BEDDING

SECTION


GRANITE CURB SHALL BE CUT AS REQUIRED TO SET CATCHBASIN
24" SLAB OPENING WITH MUNICIPAL STANDARD GRATE PER SPECIFICATIONS.
HOOD OR INSERT
4'-0"
FLOW
OUTLET PIPE

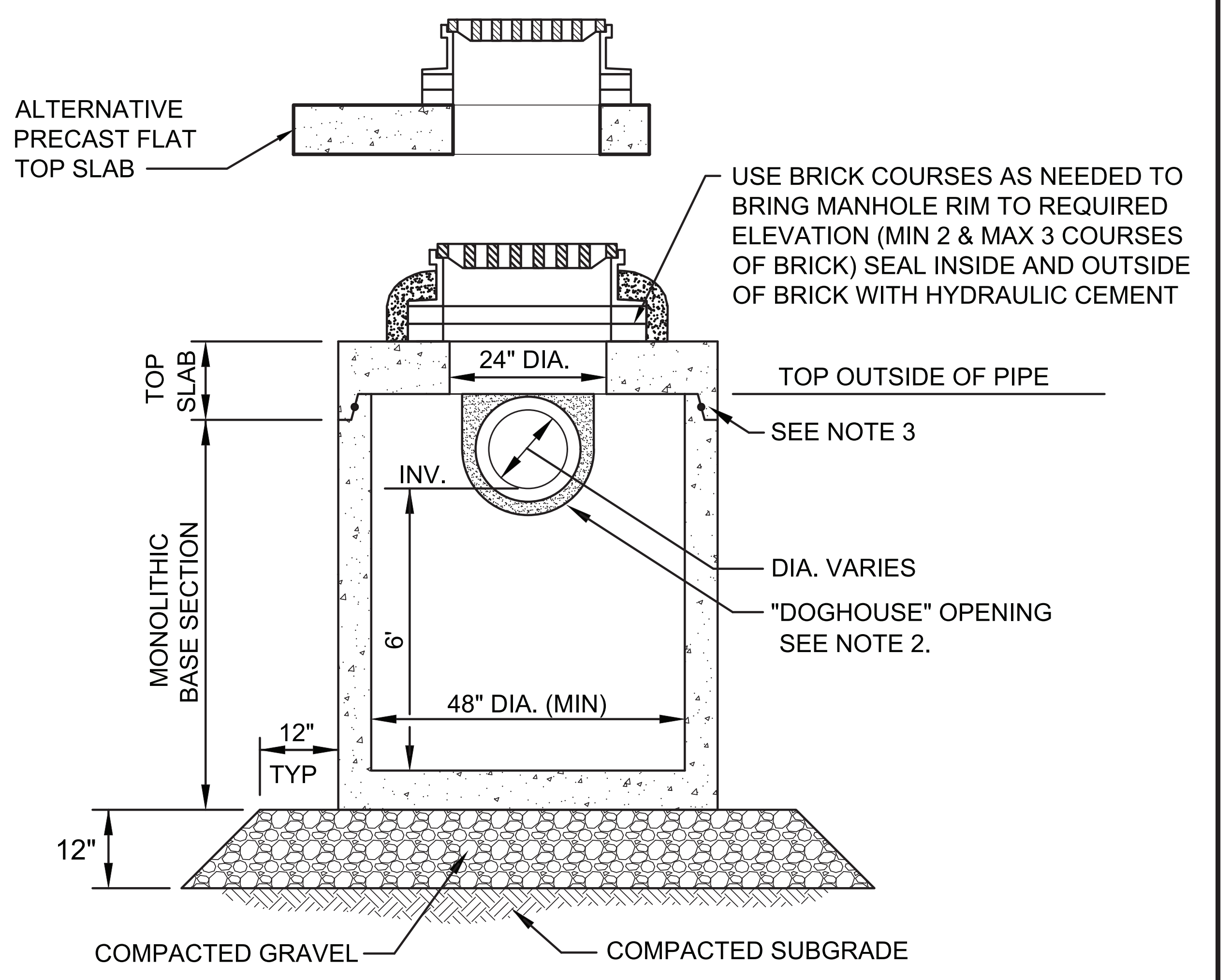
PLAN

NOTES

1. GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED UNDER BEDDING MATERIAL WHEN GROUNDWATER IS ENCOUNTERED.

DEEP SUMP CATCH BASIN - CITY OF CAMBRIDGE

SCALE: N.T.S.

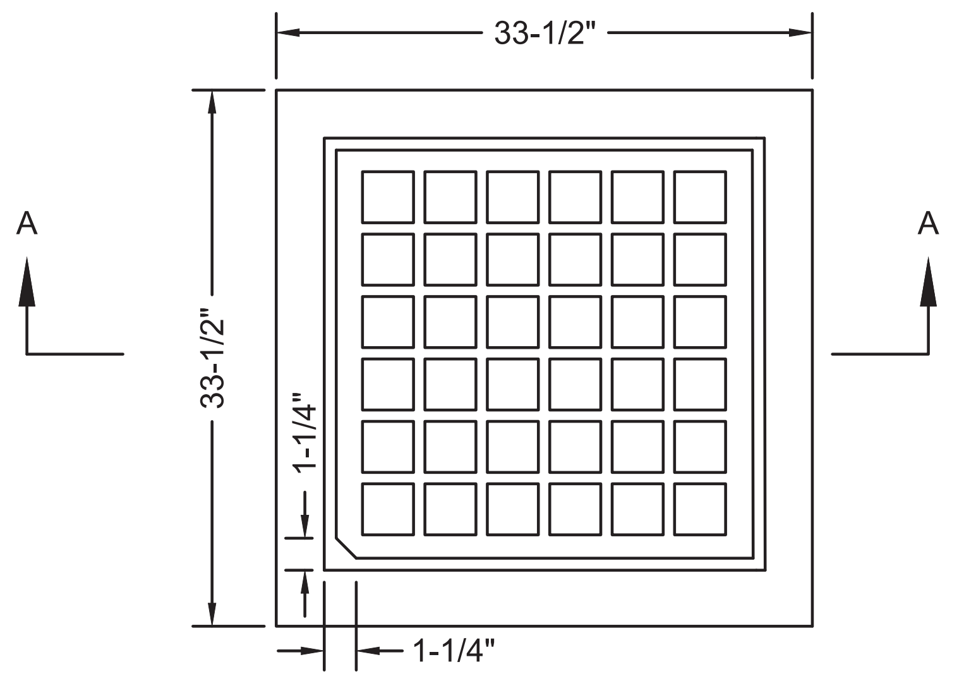

ALTERNATIVE PRECAST FLAT TOP SLAB
USE BRICK COURSES AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (MIN 2 & MAX 3 COURSES OF BRICK) SEAL INSIDE AND OUTSIDE OF BRICK WITH HYDRAULIC CEMENT
TOP SLAB
24" DIA.
TOP OUTSIDE OF PIPE
SEE NOTE 3
INV.
DIA. VARIES
"DOGHOUSE" OPENING SEE NOTE 2.
MONOLITHIC BASE SECTION
6'
48" DIA. (MIN)
12" TYP
12"
COMPACTED GRAVEL
COMPACTED SUBGRADE

NOTES:

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE (4"DEPTH) SHALL BE SET IN FULL MORTAR BED.
5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.

CATCH BASIN SHALLOW COVER (CBSC)

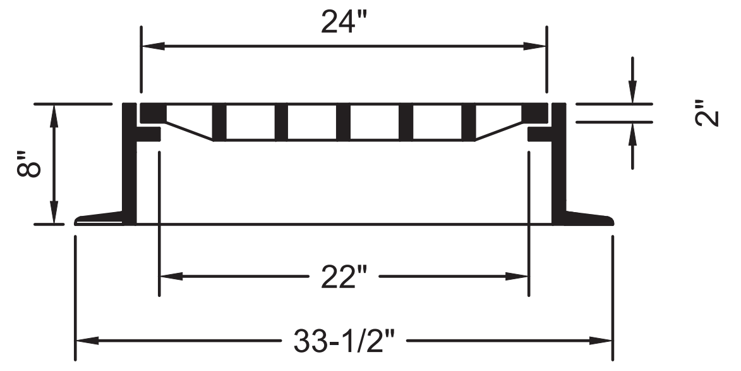
SCALE: N.T.S.



PLAN

NOTES:

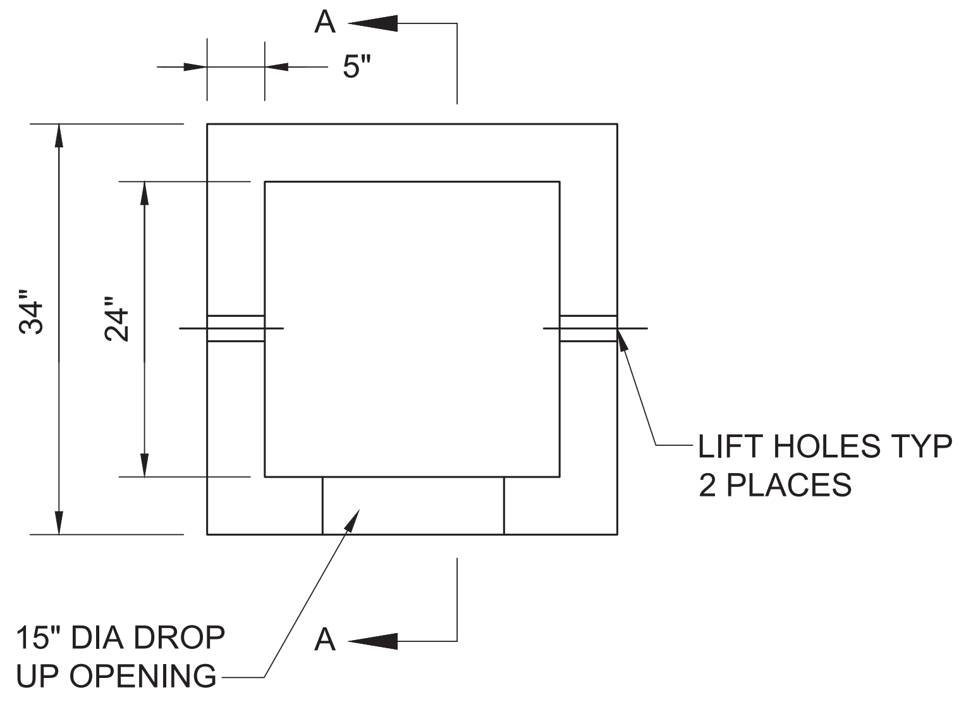
1. FRAME AND GRATE SHALL BE RATED FOR HS-20 LOADING.
2. MIN FRAME WEIGHT:
   4 FLANGE 295 LBS.
   3 FLANGE 265 LBS.
3. USE 3 FLANGE FRAMES AT CURB INLETS.



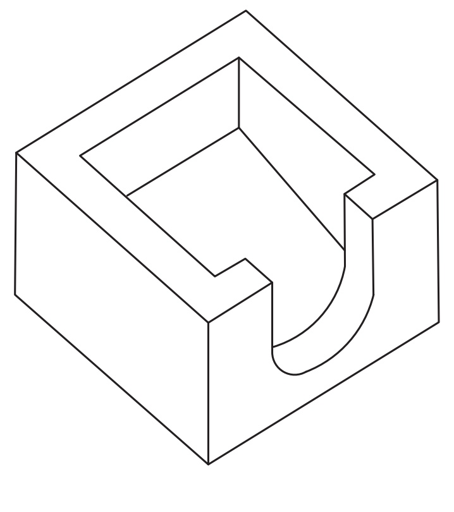
SECTION

MUNICIPAL STANDARD
CATCH BASIN FRAME & GRATE

SCALE: N.T.S.



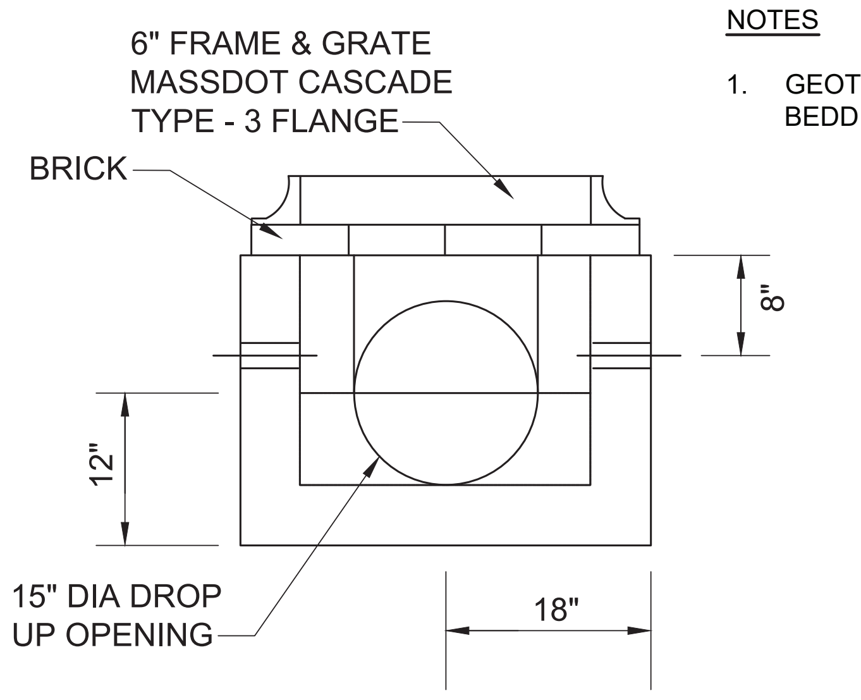
PLAN VIEW



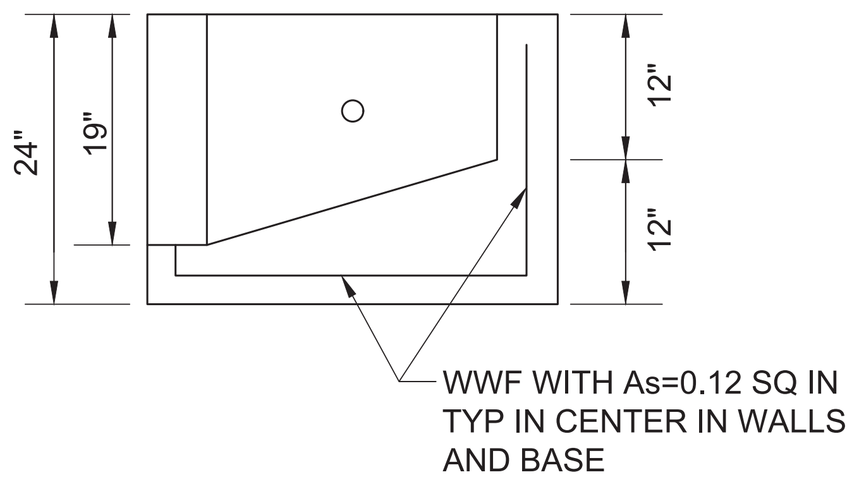
ISOMETRIC

NOTES

1. GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED UNDER BEDDING MATERIAL WHEN GROUNDWATER IS ENCOUNTERED.



ELEVATION



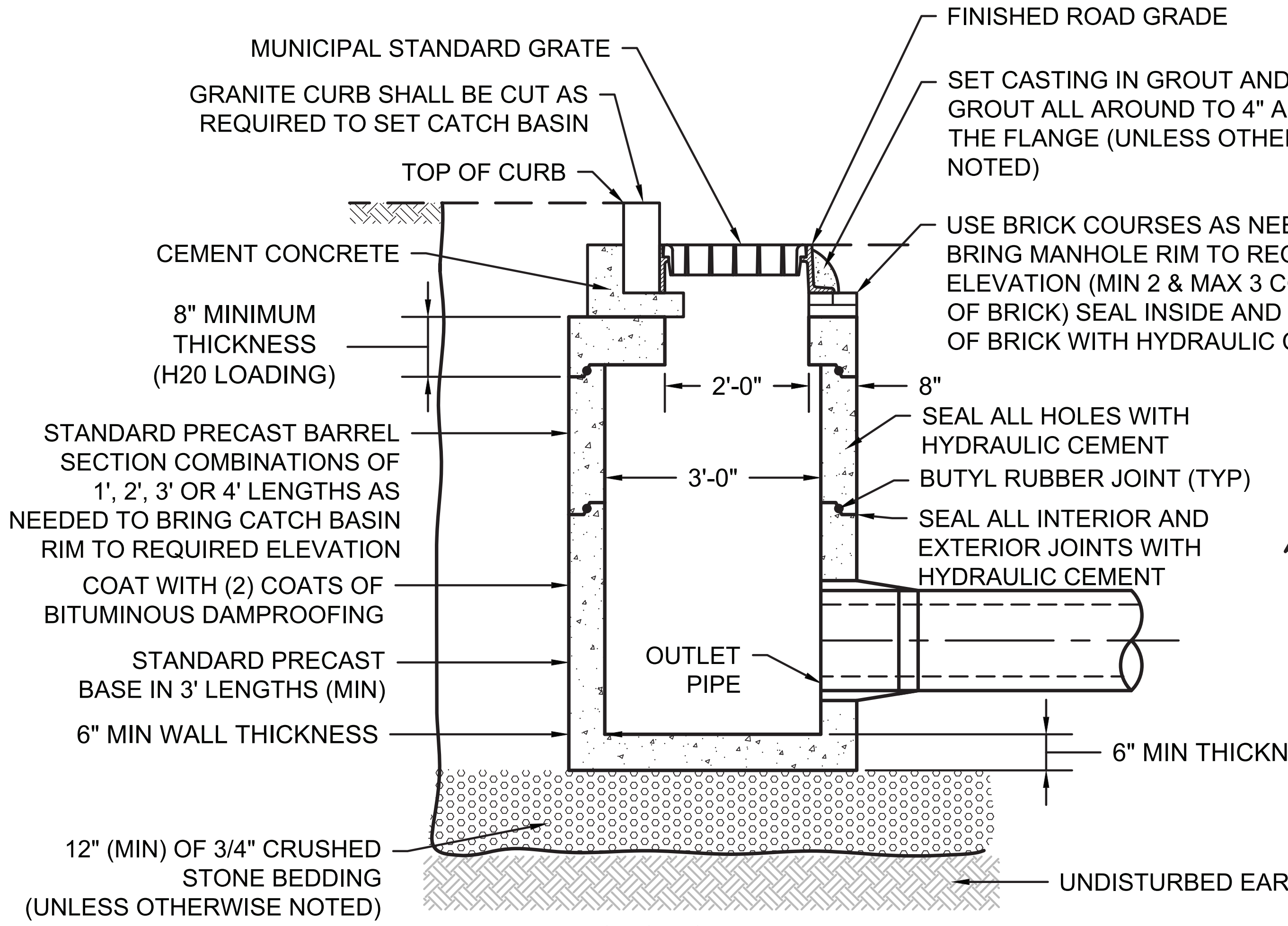
SECTION A-A

NOTES:

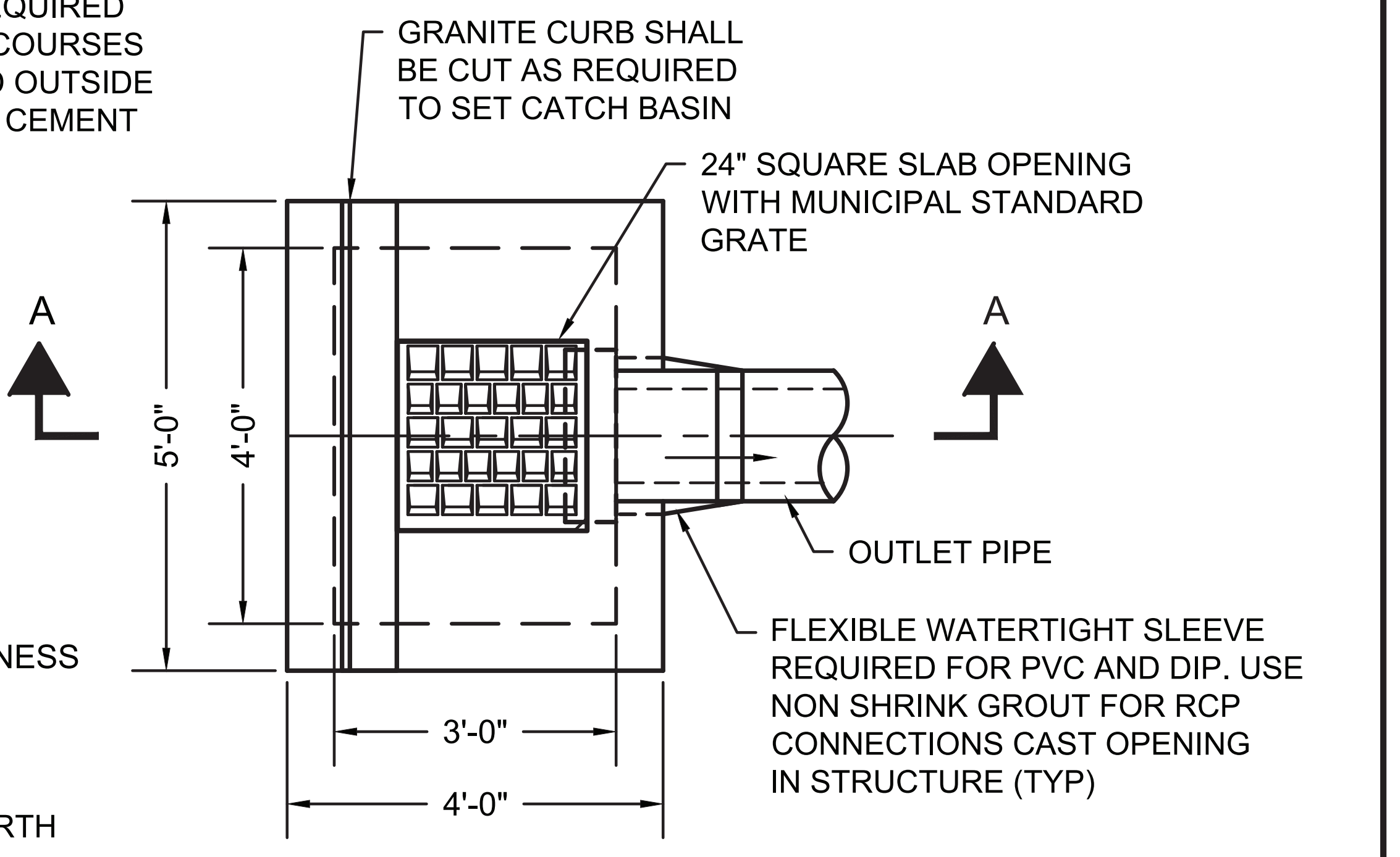
1. DESIGNED FOR AASHTO HS25-44 LOADING.
2. CONCRETE STRENGTH f'c=4000 PSI
3. REINFORCING STEEL: ASTM A185 (wwf) fy=60,000 PSI
4. 12" (MIN) OF 3/4" CRUSHED STONE BEDDING

SPECIAL GUTTER INLET - TYPE A

SCALE: NTS


MUNICIPAL STANDARD GRATE
GRANITE CURB SHALL BE CUT AS REQUIRED TO SET CATCH BASIN
TOP OF CURB
CEMENT CONCRETE
8" MINIMUM THICKNESS (H20 LOADING)
STANDARD PRECAST BARREL SECTION COMBINATIONS OF 1', 2', 3' OR 4' LENGTHS AS NEEDED TO BRING CATCH BASIN RIM TO REQUIRED ELEVATION
COAT WITH (2) COATS OF BITUMINOUS DAMPROOFING
STANDARD PRECAST BASE IN 3' LENGTHS (MIN)
6" MIN WALL THICKNESS
12" (MIN) OF 3/4" CRUSHED STONE BEDDING (UNLESS OTHERWISE NOTED)
FINISHED ROAD GRADE
SET CASTING IN GROUT AND GROUT ALL AROUND TO 4" ABOVE THE FLANGE (UNLESS OTHERWISE NOTED)
USE BRICK COURSES AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (MIN 2 & MAX 3 COURSES OF BRICK) SEAL INSIDE AND OUTSIDE OF BRICK WITH HYDRAULIC CEMENT
2'-0"
8"
SEAL ALL HOLES WITH HYDRAULIC CEMENT
3'-0"
BUTYL RUBBER JOINT (TYP)
SEAL ALL INTERIOR AND EXTERIOR JOINTS WITH HYDRAULIC CEMENT
OUTLET PIPE
6" MIN THICKNESS
UNDISTURBED EARTH

SECTION A-A


GRANITE CURB SHALL BE CUT AS REQUIRED TO SET CATCH BASIN
24" SQUARE SLAB OPENING WITH MUNICIPAL STANDARD GRATE
A
A
5'-0"
4'-0"
OUTLET PIPE
FLEXIBLE WATERTIGHT SLEEVE REQUIRED FOR PVC AND DIP. USE NON SHRINK GROUT FOR RCP CONNECTIONS CAST OPENING IN STRUCTURE (TYP)
3'-0"
4'-0"

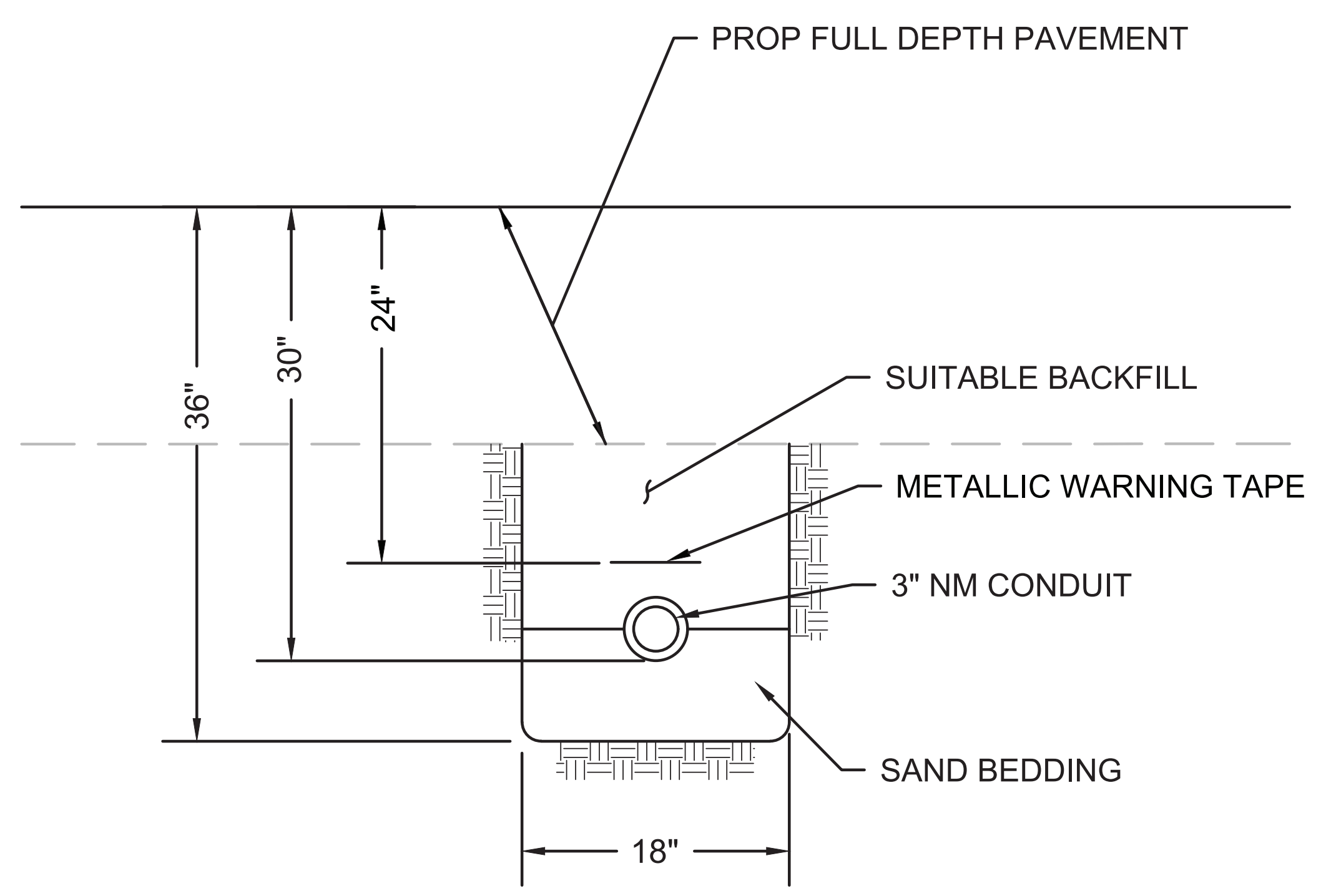
PLAN (SINGLE GRATE)

NOTES

1. GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED UNDER BEDDING MATERIAL WHEN GROUNDWATER IS ENCOUNTERED.

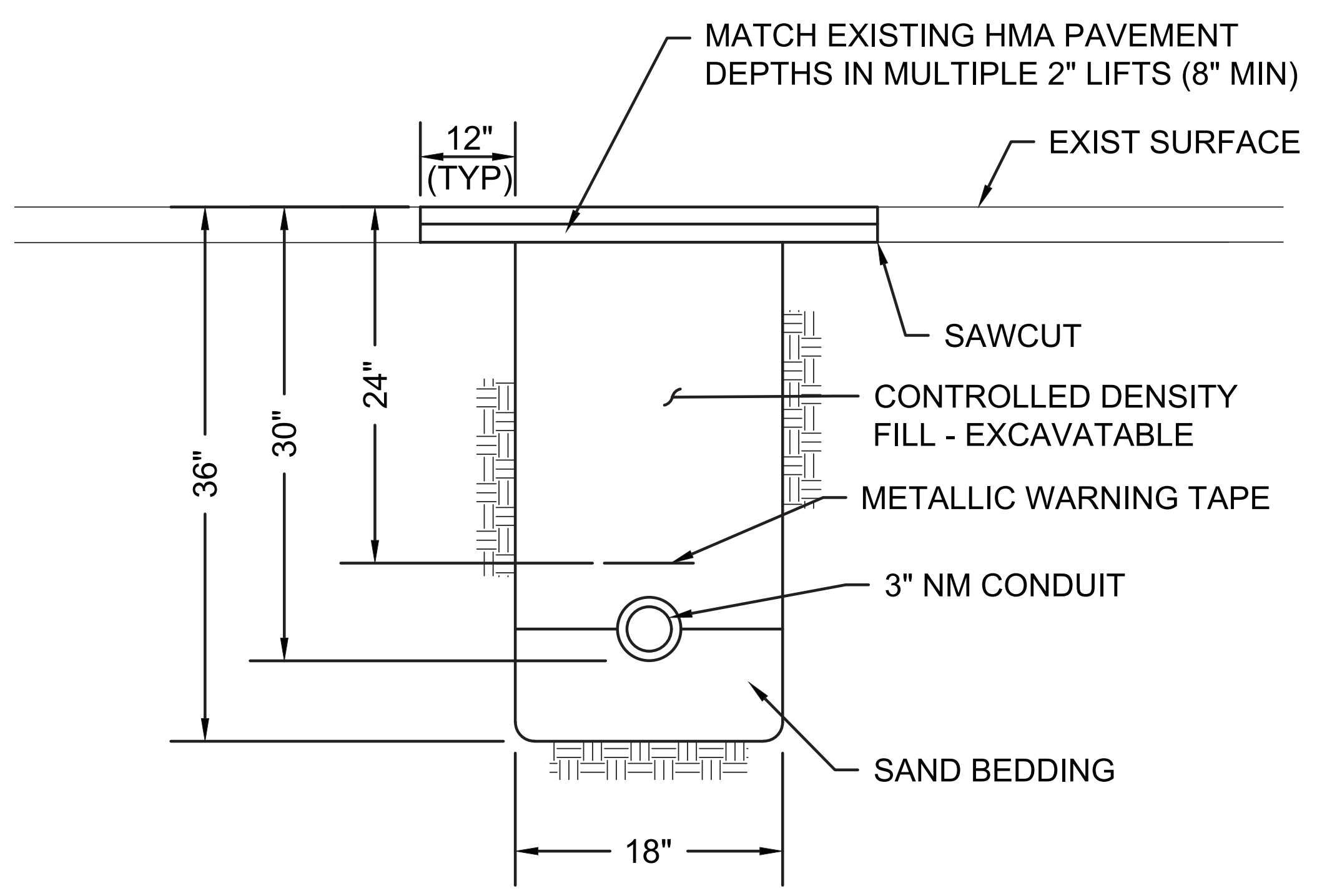
SPECIAL GUTTER INLET - TYPE B

SCALE: N.T.S.



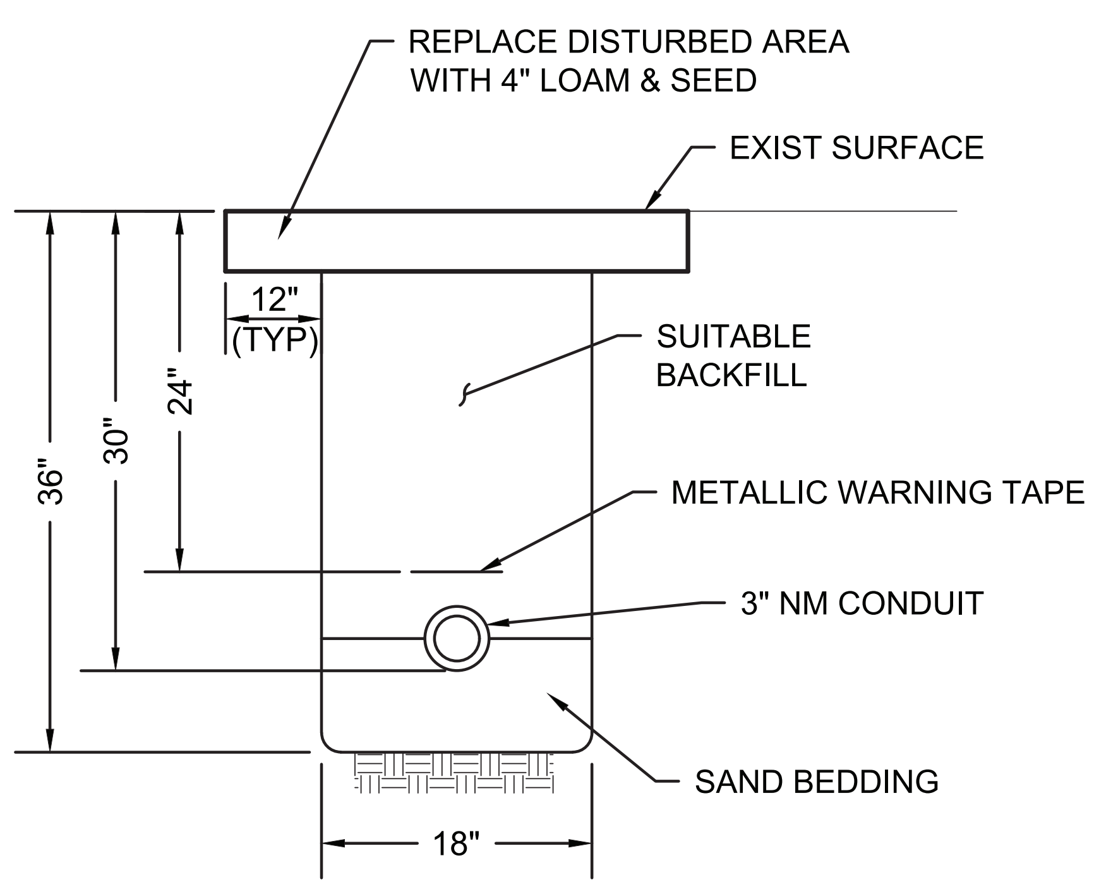
CONDUIT CROSSING ROADWAY - FULL DEPTH PAVEMENT AREAS

SCALE: N.T.S.


MATCH EXISTING HMA PAVEMENT DEPTHS IN MULTIPLE 2" LIFTS (8" MIN)
12" (TYP)
EXIST SURFACE
SAWCUT
36"
30"
24"
CONTROLLED DENSITY FILL - EXCAVATABLE
METALLIC WARNING TAPE
3" NM CONDUIT
SAND BEDDING
18"

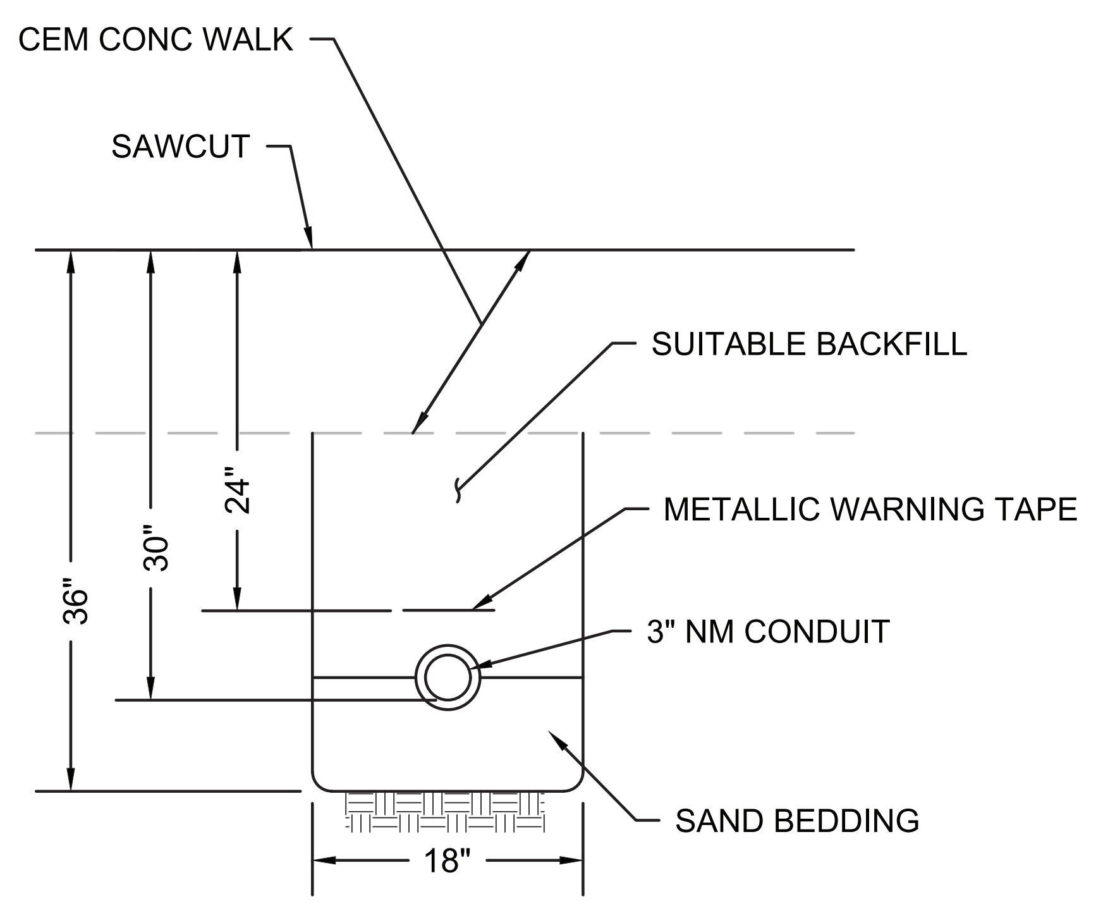
CONDUIT CROSSING ROADWAY - MILL AND OVERLAY AREAS

SCALE: N.T.S.



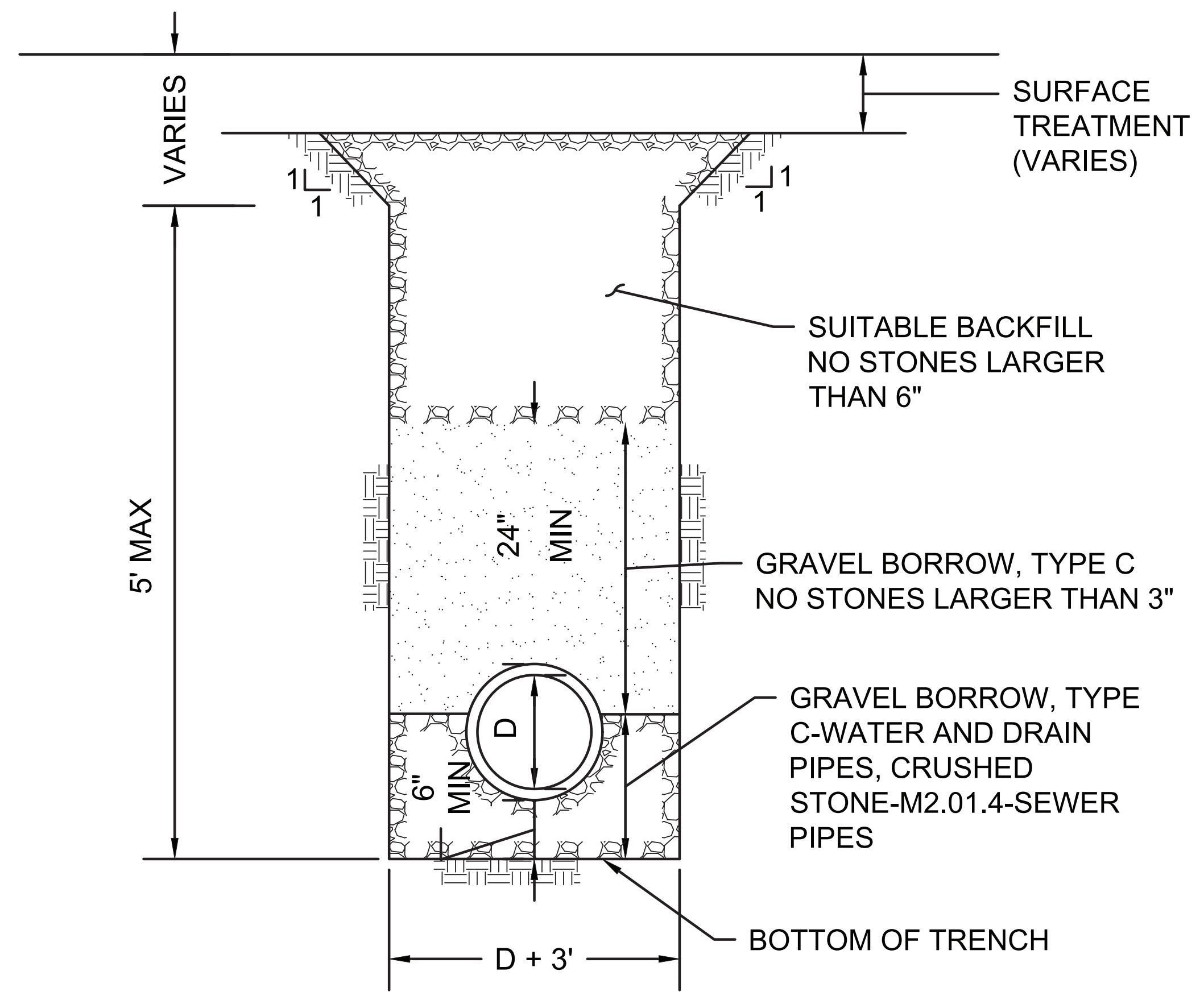
CONDUIT IN GRASS

SCALE: N.T.S.



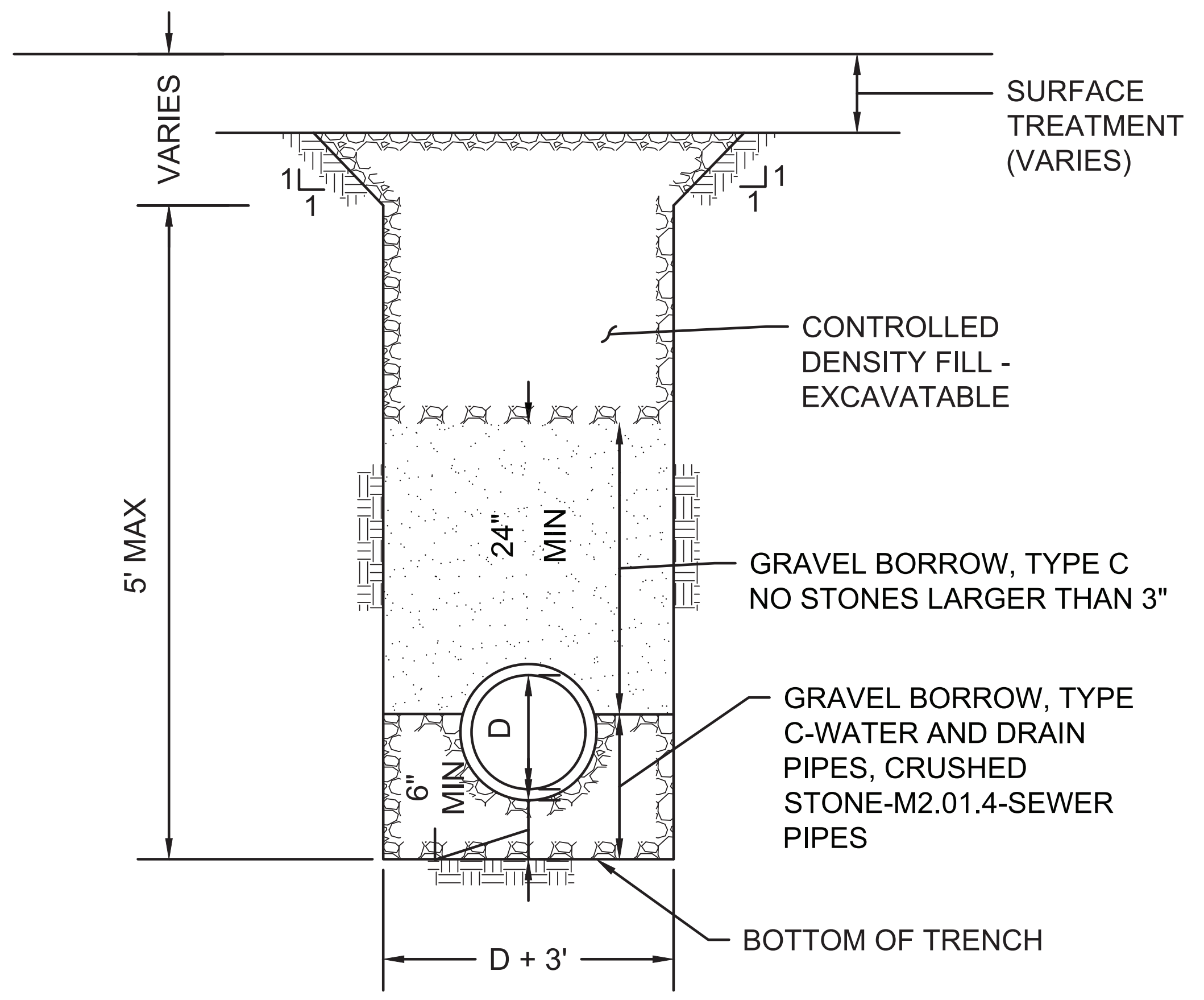
CONDUIT IN SIDEWALK

SCALE: N.T.S.


VARIES
SURFACE TREATMENT (VARIES)
1
1
1
1
SUITABLE BACKFILL NO STONES LARGER THAN 6"
5' MAX
24" MIN
GRAVEL BORROW, TYPE C NO STONES LARGER THAN 3"
D
6" MIN
GRAVEL BORROW, TYPE C-WATER AND DRAIN PIPES, CRUSHED STONE-M2.01.4-SEWER PIPES
BOTTOM OF TRENCH
D + 3'

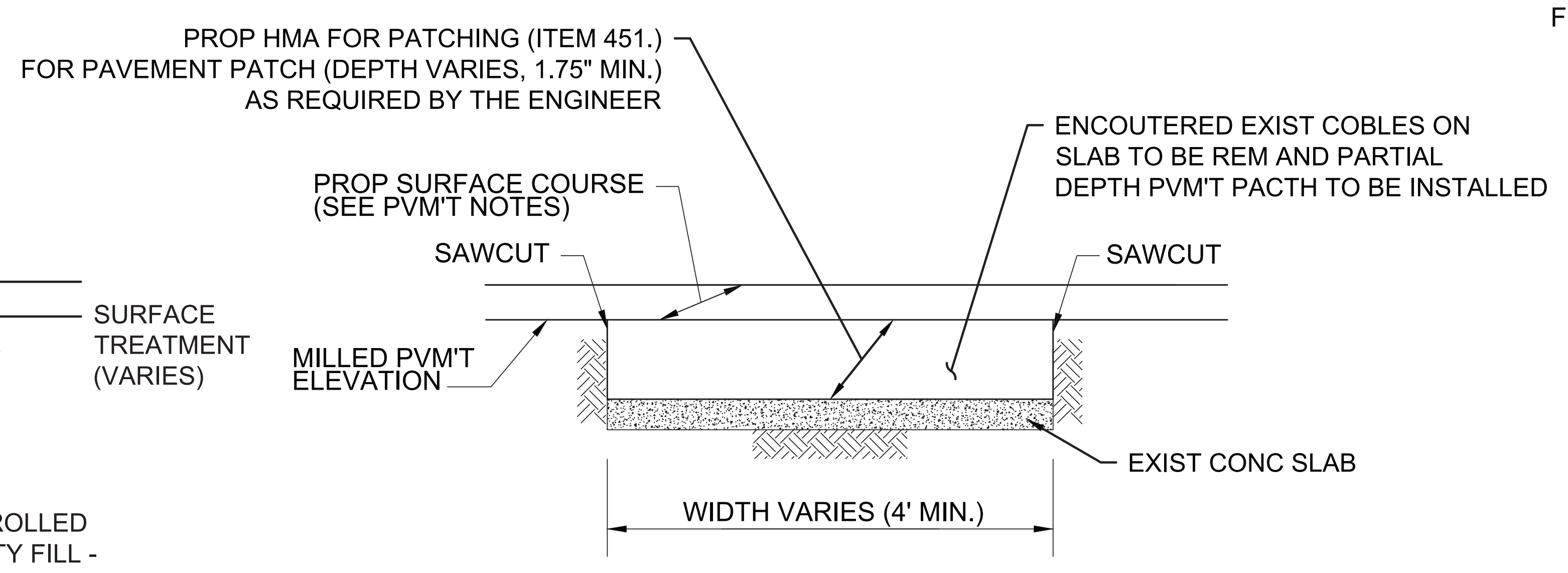
TRENCH DETAIL - FULL DEPTH PAVEMENT AREAS

SCALE: N.T.S.


VARIES
SURFACE TREATMENT (VARIES)
1
1
1
1
CONTROLLED DENSITY FILL - EXCAVATABLE
5' MAX
24" MIN
GRAVEL BORROW, TYPE C NO STONES LARGER THAN 3"
D
6" MIN
GRAVEL BORROW, TYPE C-WATER AND DRAIN PIPES, CRUSHED STONE-M2.01.4-SEWER PIPES
BOTTOM OF TRENCH
D + 3'

TRENCH DETAIL - MILL AND OVERLAY AREAS

SCALE: N.T.S.

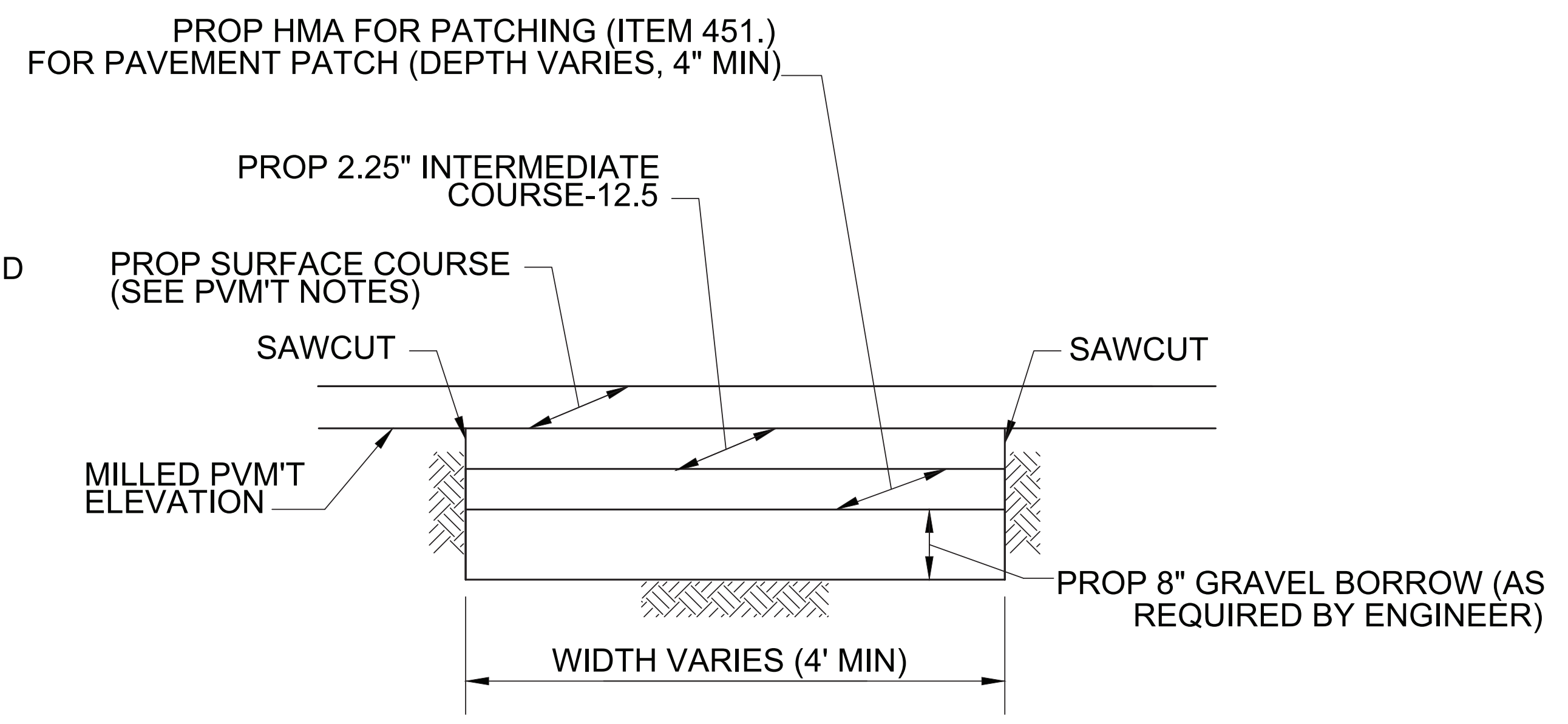

PROP HMA FOR PATCHING (ITEM 451.) FOR PAVEMENT PATCH (DEPTH VARIES, 1.75" MIN.) AS REQUIRED BY THE ENGINEER
ENCOUTERED EXIST COBLES ON SLAB TO BE REM AND PARTIAL DEPTH PVM'T PACTH TO BE INSTALLED
PROP SURFACE COURSE (SEE PVM'T NOTES)
SAWCUT
SAWCUT
MILLED PVM'T ELEVATION
EXIST CONC SLAB
WIDTH VARIES (4' MIN.)

NOTES:

1. PARTIAL DEPTH PAVEMENT PATCH SHALL BE INSTALLED ON PAVEMENT MILLING & OVERLAY STREET AS REQUIRED BY THE ENGINEER.
2. HMA DEPTH MAY BE ADJUSTED IN THE FIELD AS REQUIRED BY THE ENGINEER IN ORDER TO MATCH THE MILLED PAVEMENT DEPTH.
3. SWEEP AND CLEAN SAWCUT PAVEMENT EDGE, APPLY UNIFORM COAT OF RS-1 ASPAHLT EMULSION PRIOR TO PLACING HOT MIX ASPHALT.

PARTIAL DEPTH PAVEMENT PATCH

SCALE: N.T.S.


PROP HMA FOR PATCHING (ITEM 451.) FOR PAVEMENT PATCH (DEPTH VARIES, 4" MIN)
PROP 2.25" INTERMEDIATE COURSE-12.5
PROP SURFACE COURSE (SEE PVM'T NOTES)
SAWCUT
SAWCUT
MILLED PVM'T ELEVATION
PROP 8" GRAVEL BORROW (AS REQUIRED BY ENGINEER)
WIDTH VARIES (4' MIN)

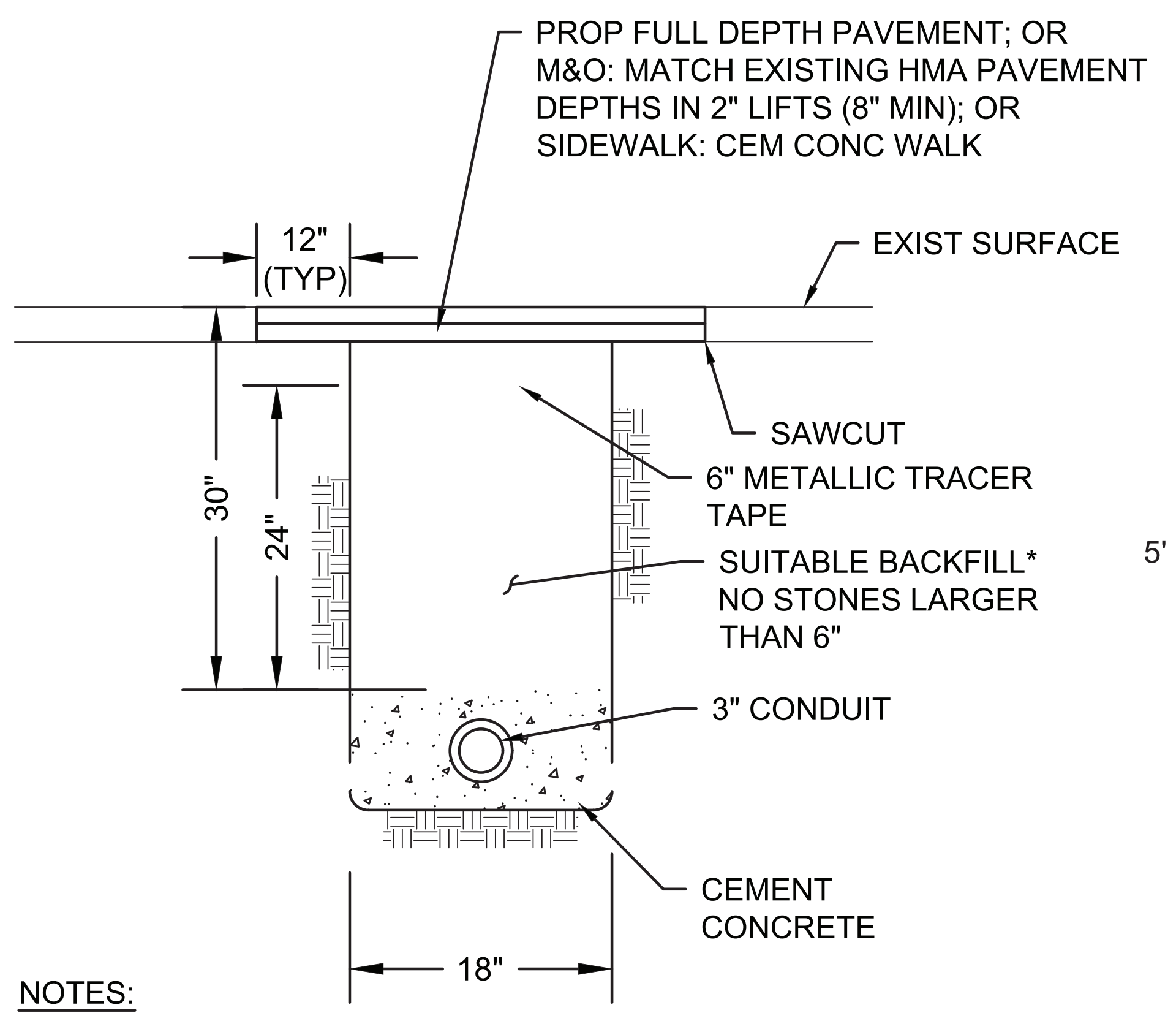
NOTES:

1. FULL DEPTH PAVEMENT PATCH SHALL BE INSTALLED ON PAVEMENT MILLING & OVERLAY STREET AS REQUIRED BY THE ENGINEER.
2. HMA DEPTH MAY BE ADJUSTED IN THE FIELD AS REQUIRED BY THE ENGINEER IN ORDER TO MATCH THE MILLED PAVEMENT DEPTH.
3. SWEEP AND CLEAN SAWCUT PAVEMENT EDGE, APPLY UNIFORM COAT OF RS-1 ASPAHLT EMULSION PRIOR TO PLACING HOT MIX ASPHALT.

FULL DEPTH PAVEMENT PATCH

SCALE: N.T.S.

CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION DETAILS
SHEET 88 OF 120

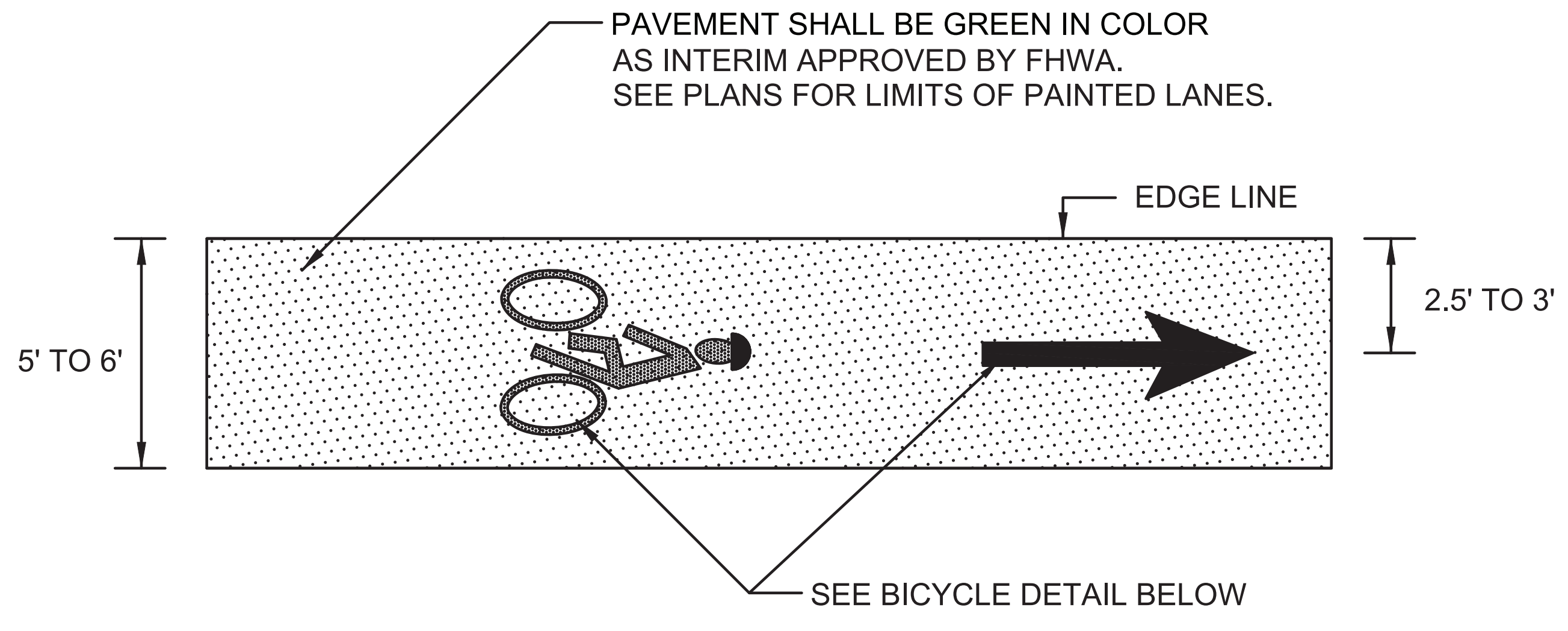


NOTES:

1. CONDUIT TO BE ENCASED IN CEMENT CONCRETE WITH 4" MINIMUM COVER ON ALL SIDES.
2. USE SPACERS TO MAINTAIN MINIMUM SPACING REQUIREMENTS.
3. CEMENT CONCRETE SHALL BE 4,000 PSI, ¾ IN, 610.

CONDUIT CROSSING ROADWAY/DRIVEWAY CAMBRIDGE STANDARD

SCALE: NTS

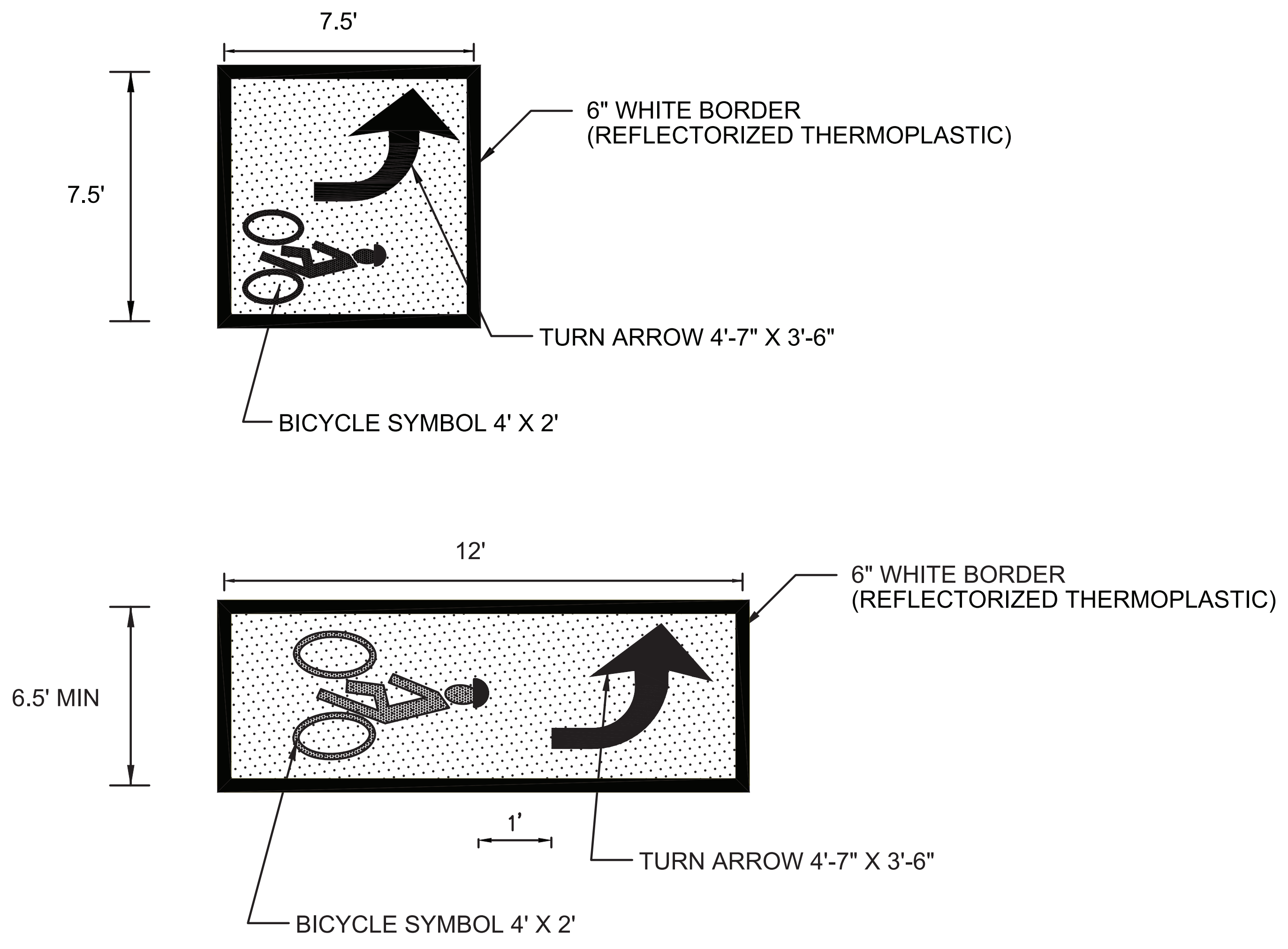

PAVEMENT SHALL BE GREEN IN COLOR
AS INTERIM APPROVED BY FHWA.
SEE PLANS FOR LIMITS OF PAINTED LANES.
EDGE LINE
5' TO 6'
2.5' TO 3'
SEE BICYCLE DETAIL BELOW

NOTES:

1. SEE ITEM 864.08 FOR COLORED COATING (GREEN) FOR BICYCLE LANES ALONG MONSIGNOR O'BRIEN HIGHWAY.

COLORED BICYCLE LANE

SCALE: N.T.S.

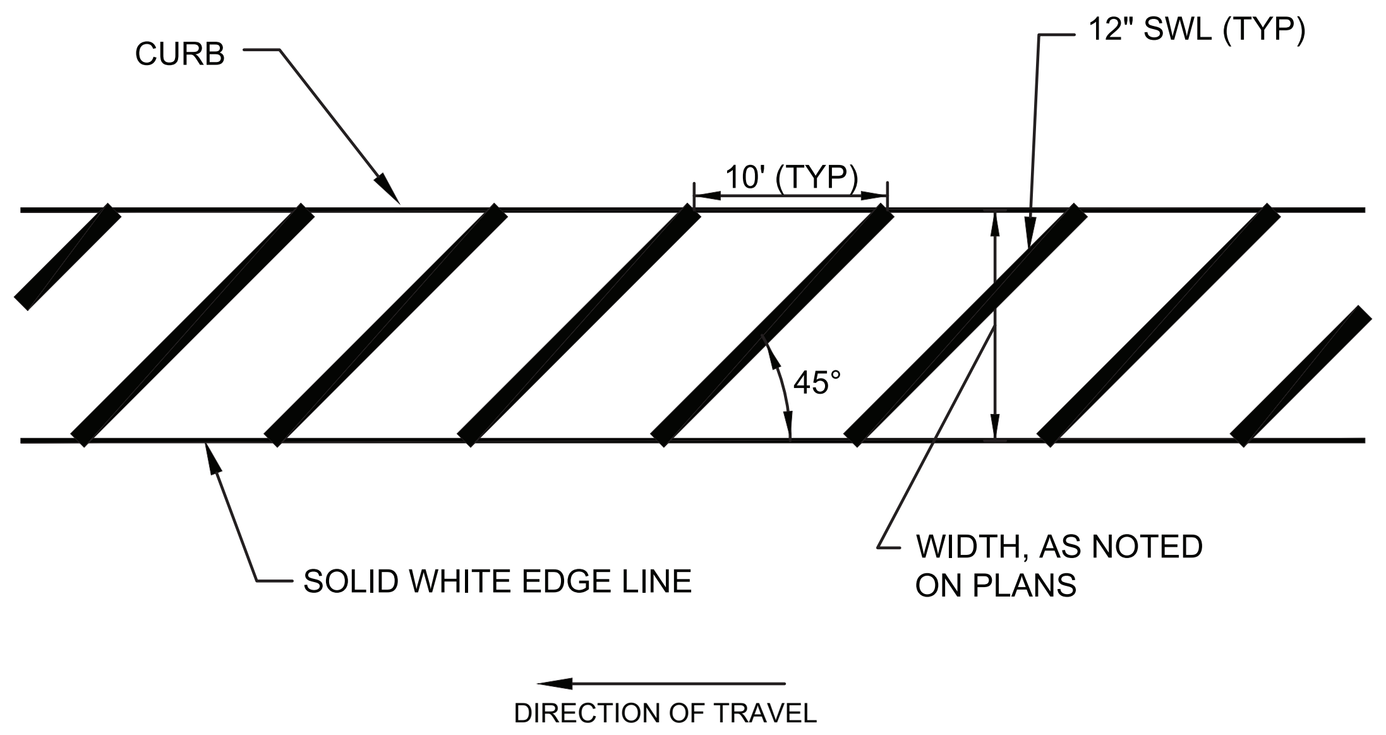


NOTES:

1. LEGEND MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
2. SEE ITEM 864.08 FOR COLORED COATING (GREEN) FOR BICYCLE LANES ALONG MONSIGNOR O'BRIEN HIGHWAY.
3. SEE ITEM 864.09 FOR COLORED PREFORMED THERMOPLASTIC (GREEN) FOR BICYCLE LANES ALONG CAMBRIDGE STREET.

TWO STAGE TURN QUEUE BOX

SCALE: N.T.S.

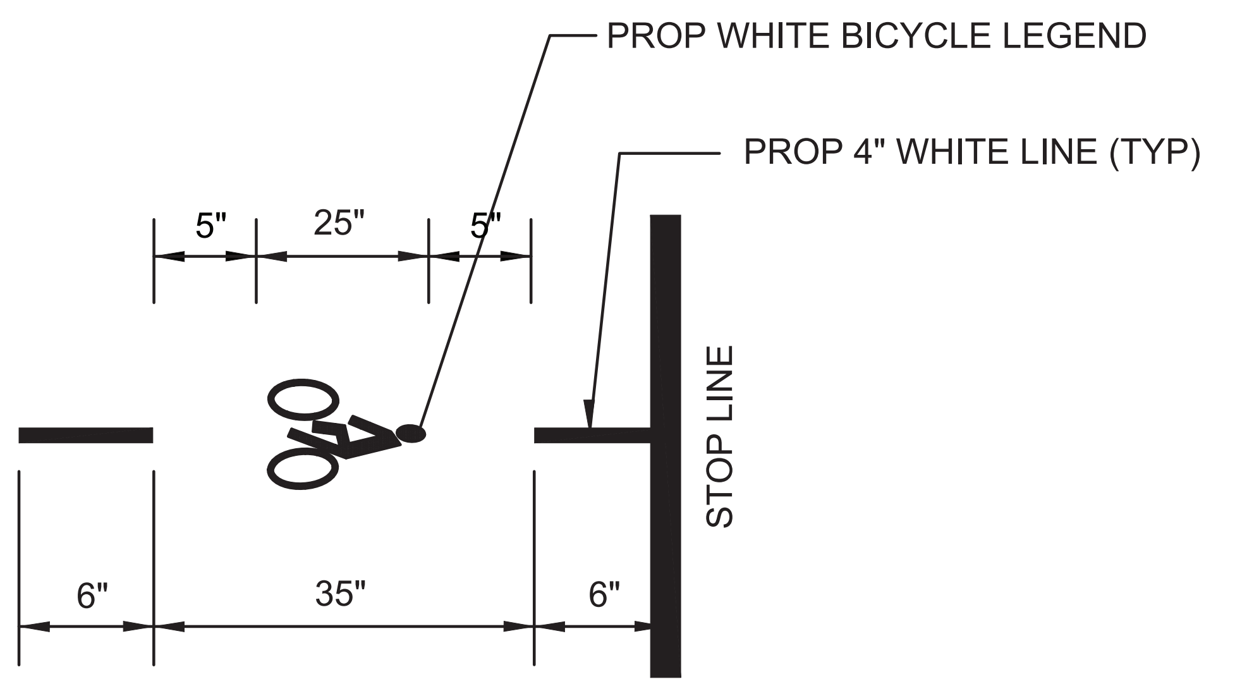


NOTES:

1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (e.g. TWO - 6" LINES) WILL BE ACCEPTED.

CHANNELIZED MARKINGS - EDGE OF ROADWAY FOR ROADWAYS 40MPH OR LESS

SCALE: NTS DWG: PM-15 DATE: OCT 2015

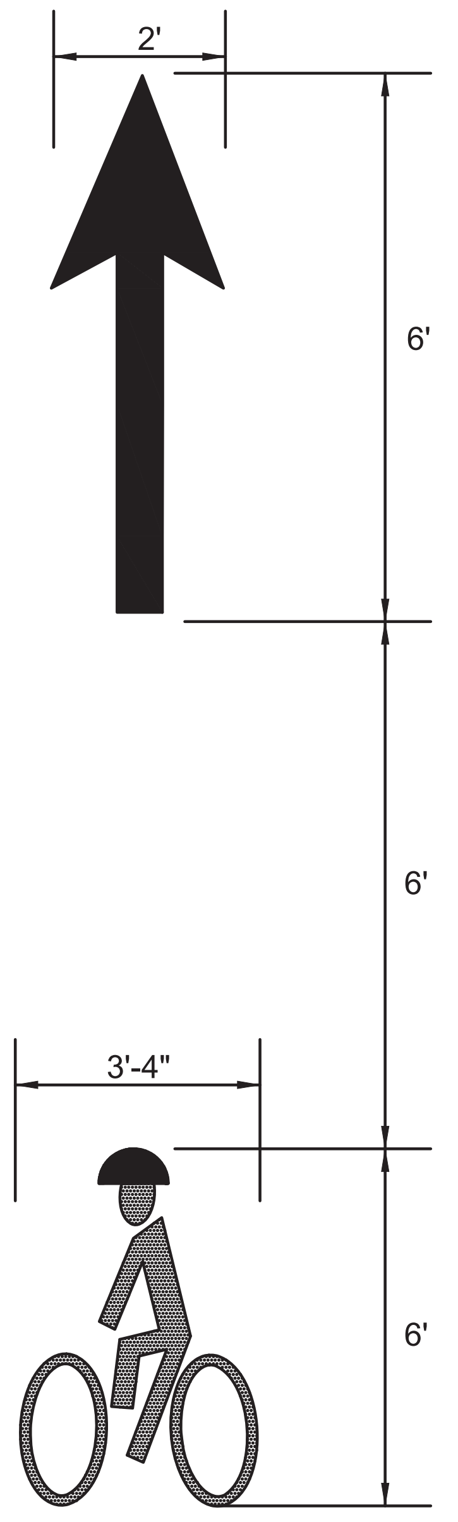


NOTES:

1. REFER TO FIGURE 9C-7 IN THE MUTCD.
2. MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

BICYCLE LEGEND DETAIL

SCALE: NTS

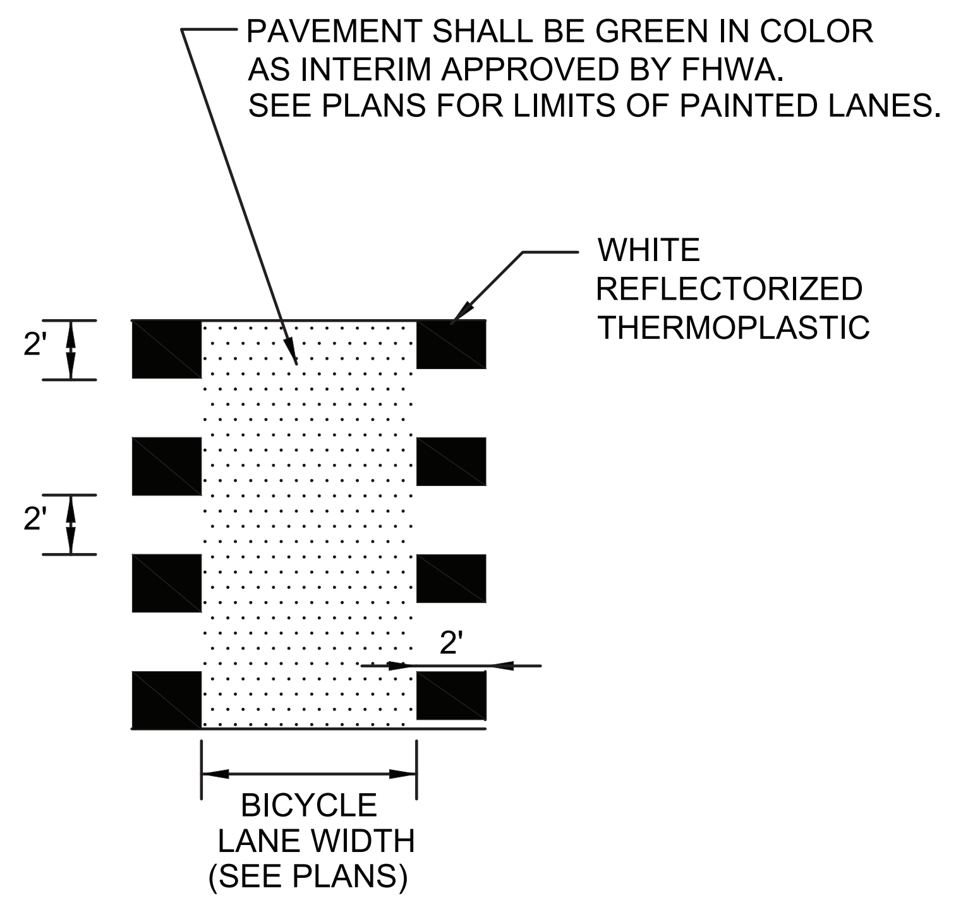


NOTES:

1. REFER TO FIGURE 9C-3B IN THE MUTCD FOR MORE DETAIL.
2. MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

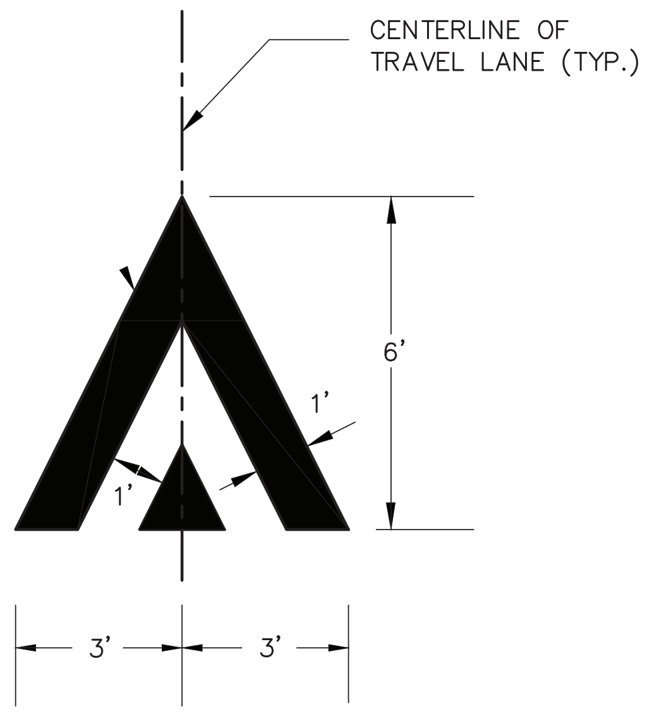
BIKE LANE PAVEMENT MARKINGS

SCALE: NTS


PAVEMENT SHALL BE GREEN IN COLOR
AS INTERIM APPROVED BY FHWA.
SEE PLANS FOR LIMITS OF PAINTED LANES.
WHITE
REFLECTORIZED
THERMOPLASTIC
2'
2'
2'
BICYCLE
LANE WIDTH
(SEE PLANS)

BICYCLE CROSSING

SCALE: N.T.S.



NOTES:

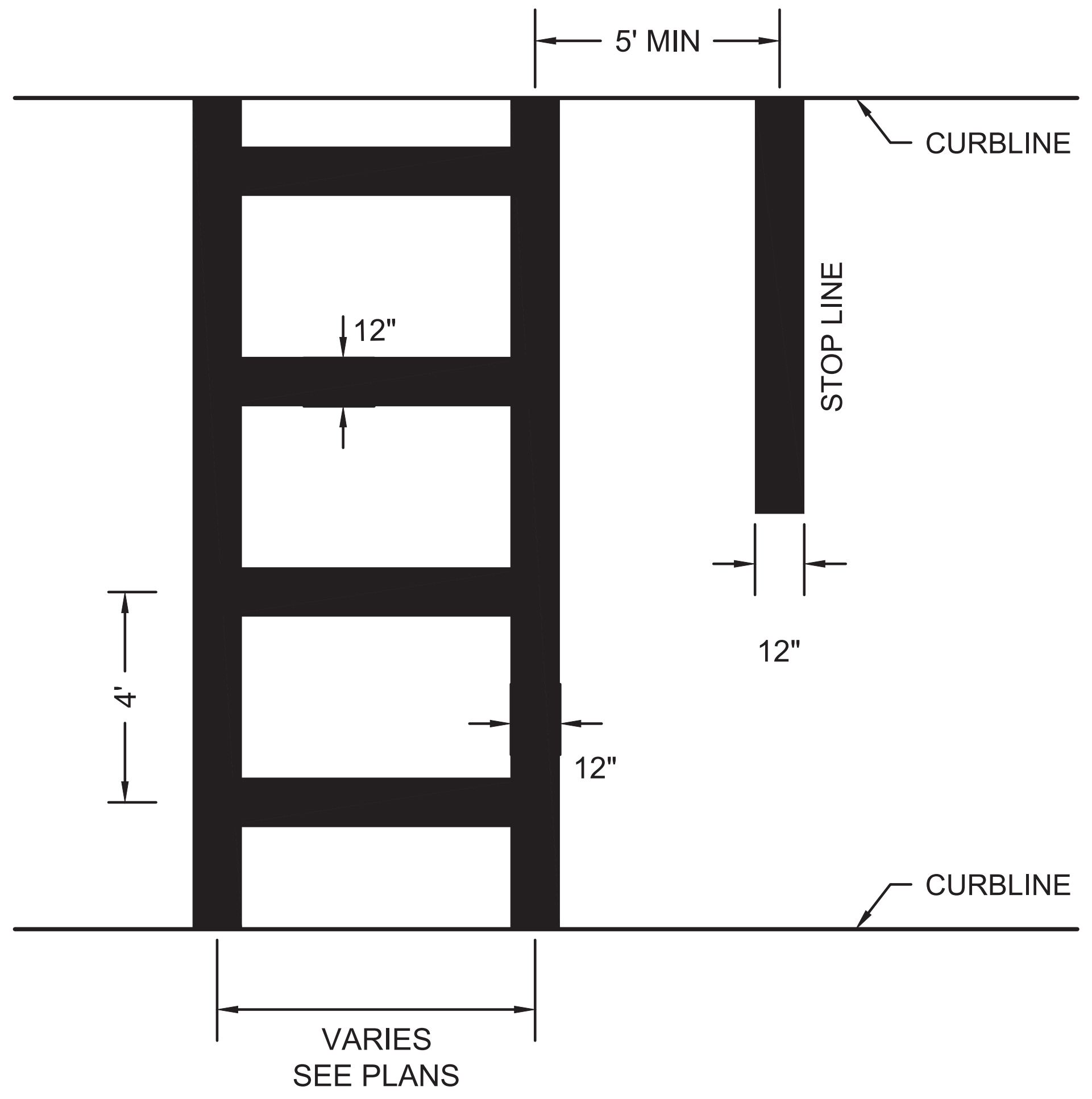
1. MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

RAISED CROSSING MARKING

SCALE: N.T.S.

11554-DET.DWG Plotted on 13-Jul-2021 12:13 PM

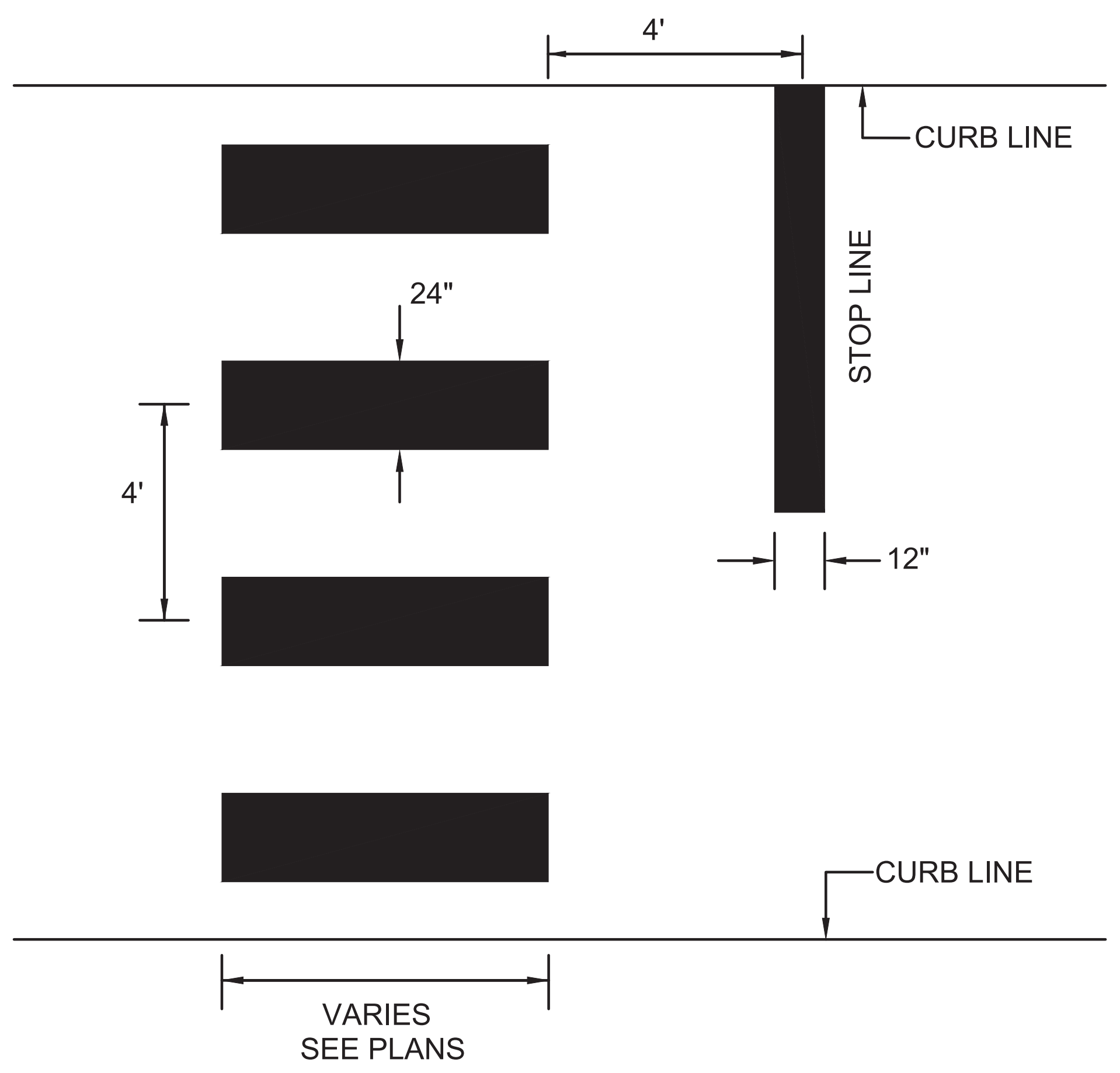
11554-DET.DWG Plotted on 13-Jul-2021 12:13 PM



NOTES:
1. ALL 12" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY A MASSDOT REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.
3. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMO-PLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.
4. THIS CROSSWALK DETAIL SHALL BE USED AT THE FOLLOWING LOCATIONS:
   4.a. O'BRIEN HWY AT WATER ST
   4.b. O'BRIEN HWY AT GORE ST
   4.c. O'BRIEN HWY AT N. FIRST ST
   4.d. O'BRIEN HWY AT EAST ST/CAMBRIDGE ST
   4.e. O'BRIEN HWY AT LEIGHTON ST
   4.f. O'BRIEN HWY AT LAND BLVD

STANDARD CROSSWALK WITH PARALLEL LINES

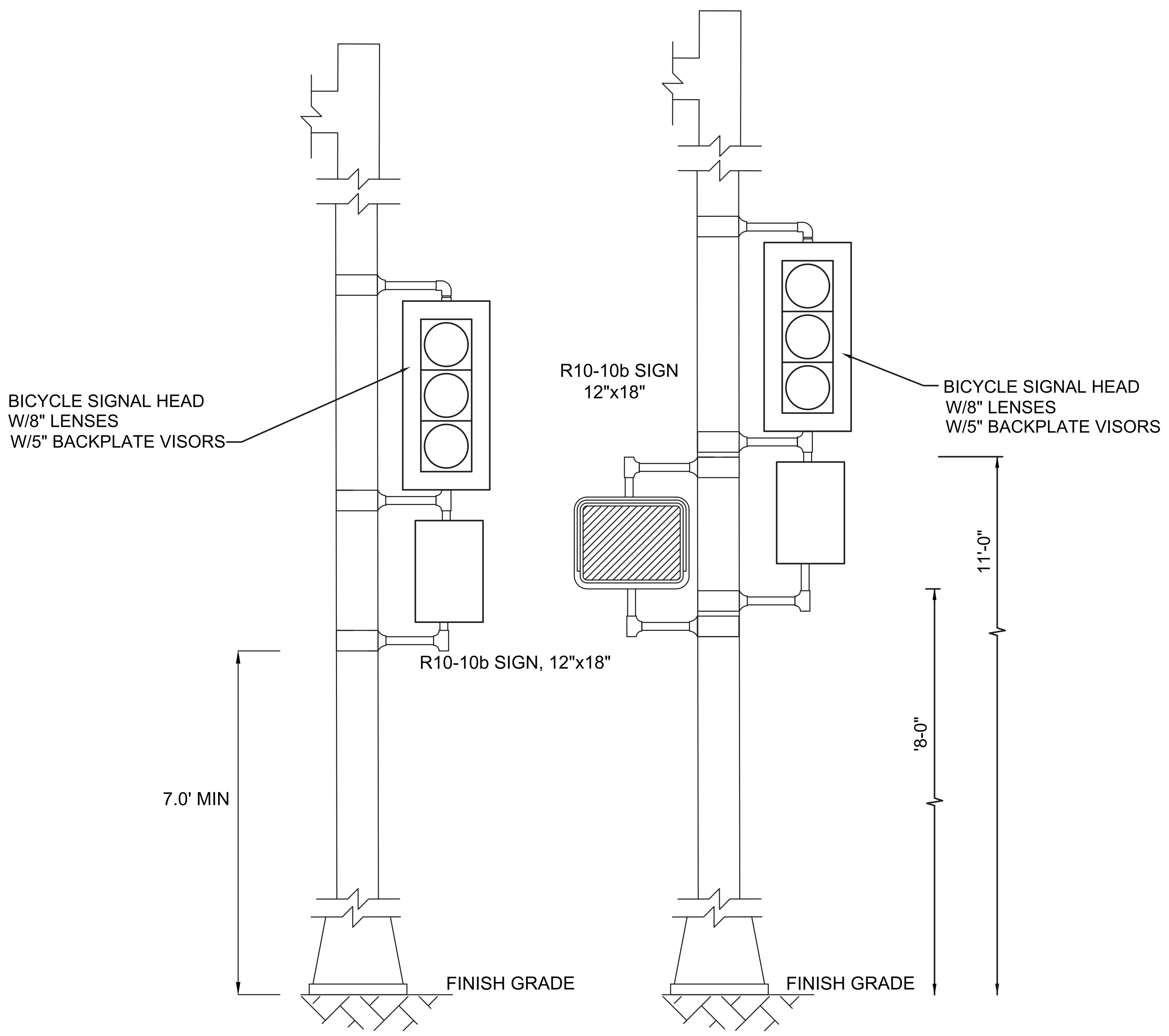
SCALE: N.T.S. DWG: PM-07 DATE: APRIL 2013



NOTES:
1. ALL 12" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
2. ALL 24" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN TWO APPLICATION OF 12" LINES.
3. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY A CAMBRIDGE DPW REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.
4. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMO-PLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.
5. THIS CROSSWALK DETAIL SHALL BE USED AT THE FOLLOWING LOCATION:
   5.a. CAMBRIDGE ST AT N.FIRST ST/FIRST ST

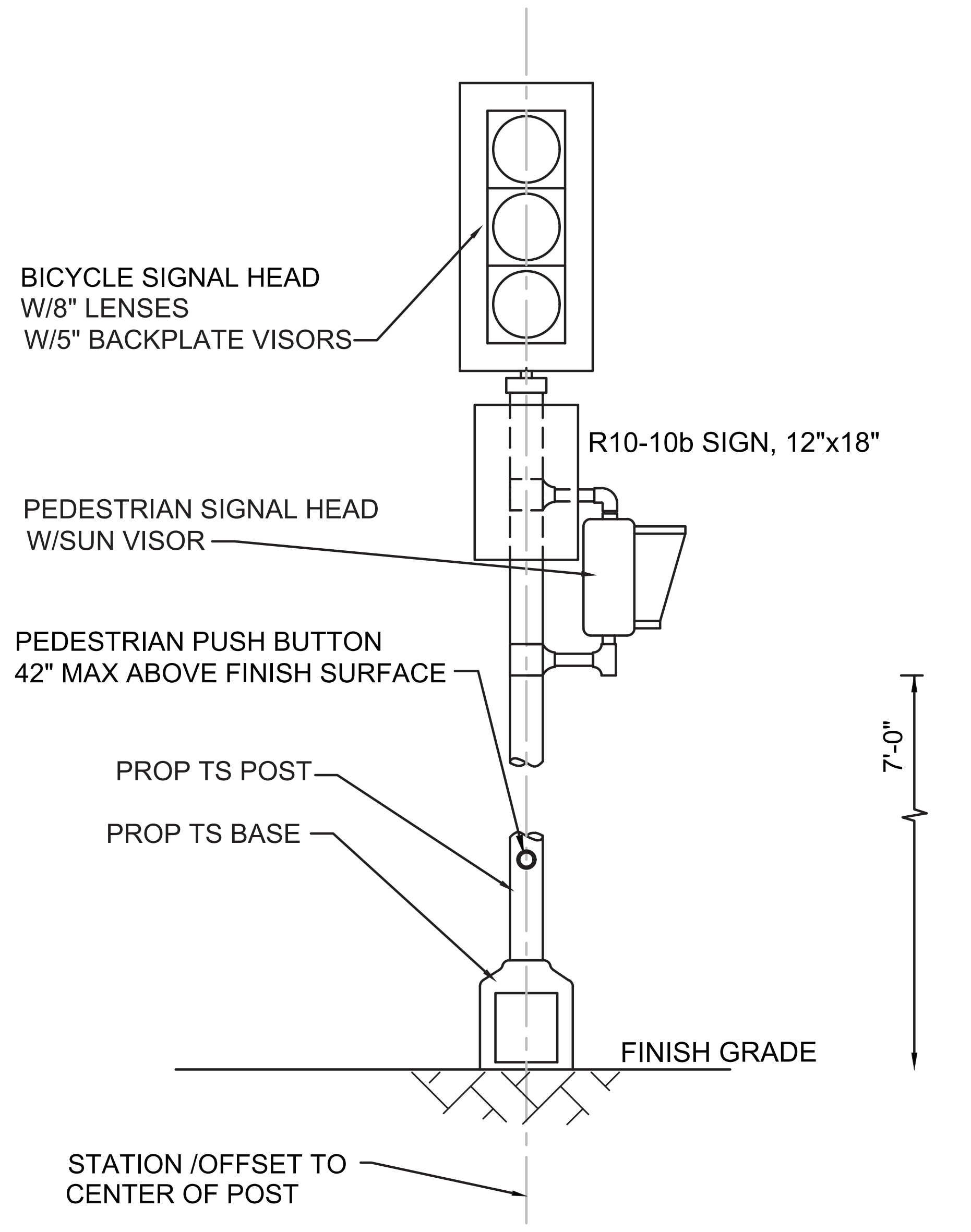
CITY OF CAMBRIDGE STANDARD CROSSWALK WITH PARALLEL LINES

SCALE: N.T.S.



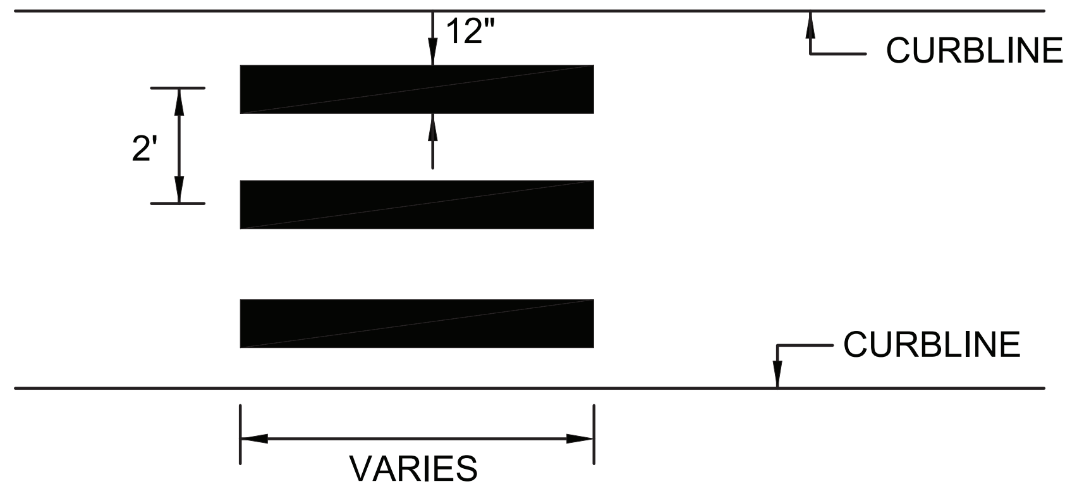
BICYCLE SIGNAL HEAD W/R10-10b SIGN - MAST ARM MOUNTED

SCALE: N.T.S.



BICYCLE SIGNAL HEAD W/R10-10b SIGN - POST MOUNTED

SCALE: N.T.S. DWG: PM-16 DATE: MARCH 2015



NOTES:
1. ALL 12" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.

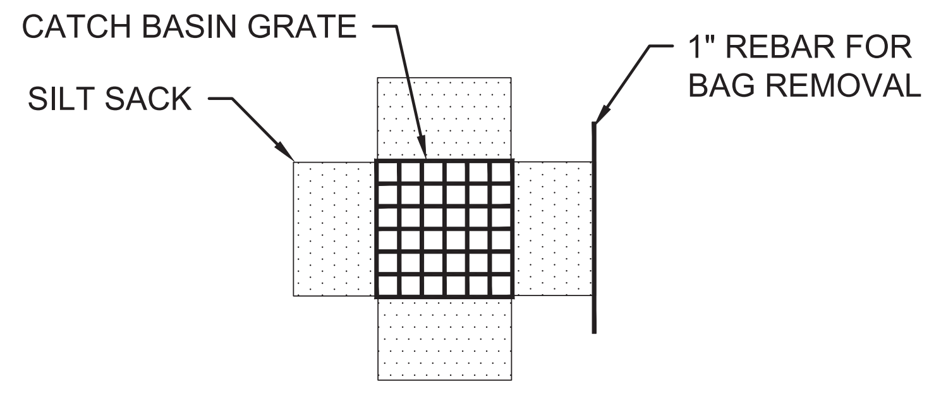
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY CAMBRIDGE DPW REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.

3. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMOPLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.

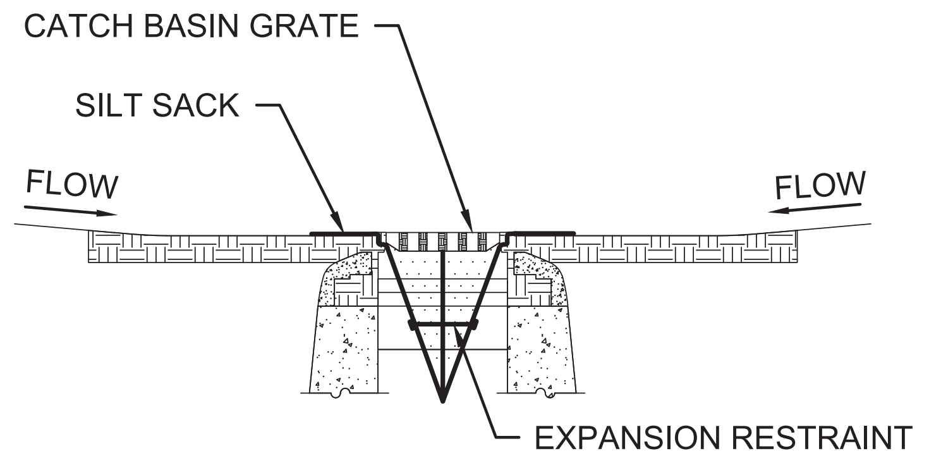
CROSSWALK ACROSS BICYCLE LANE

SCALE: NTS

11554-DET.DWG   Plotted on 13-Jul-2021 12:13 PM



PLAN VIEW



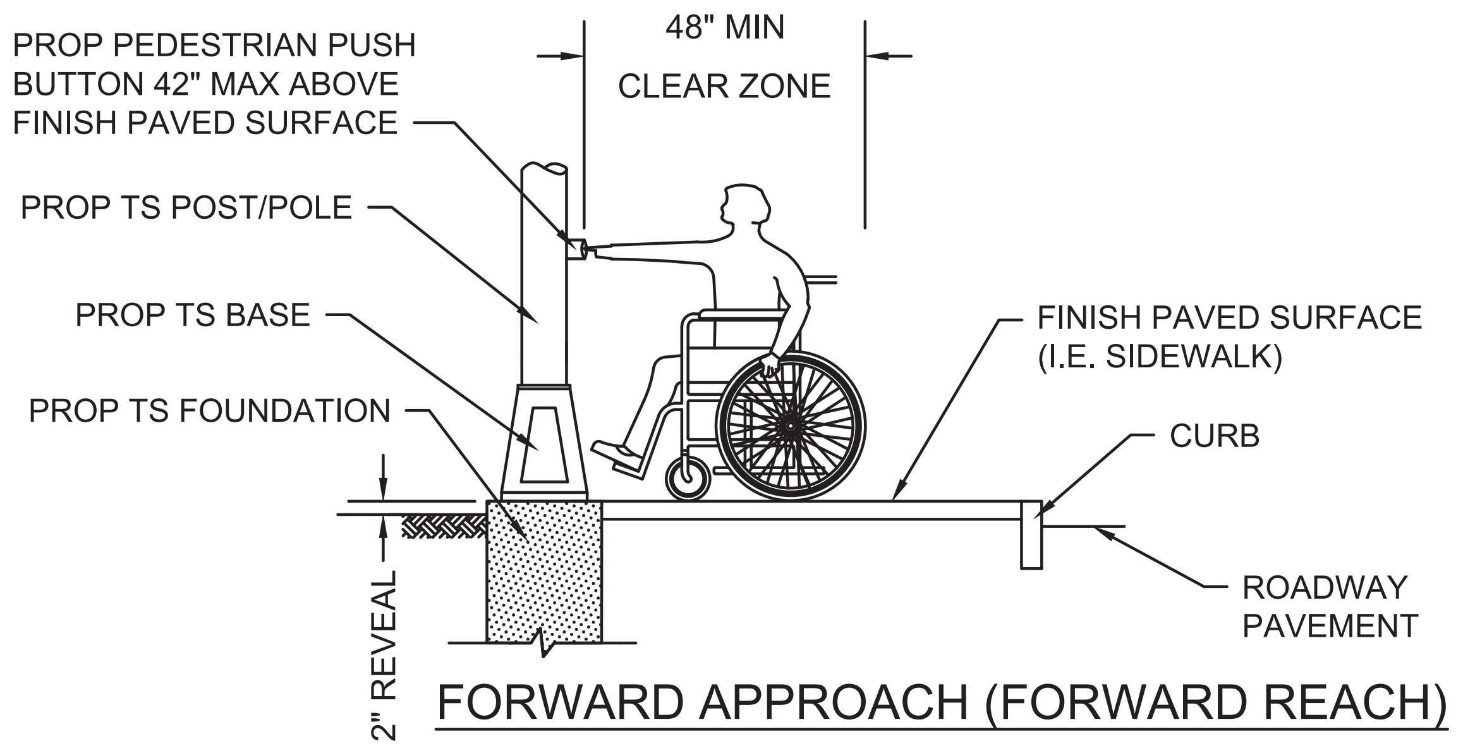
SECTION VIEW

NOTES:

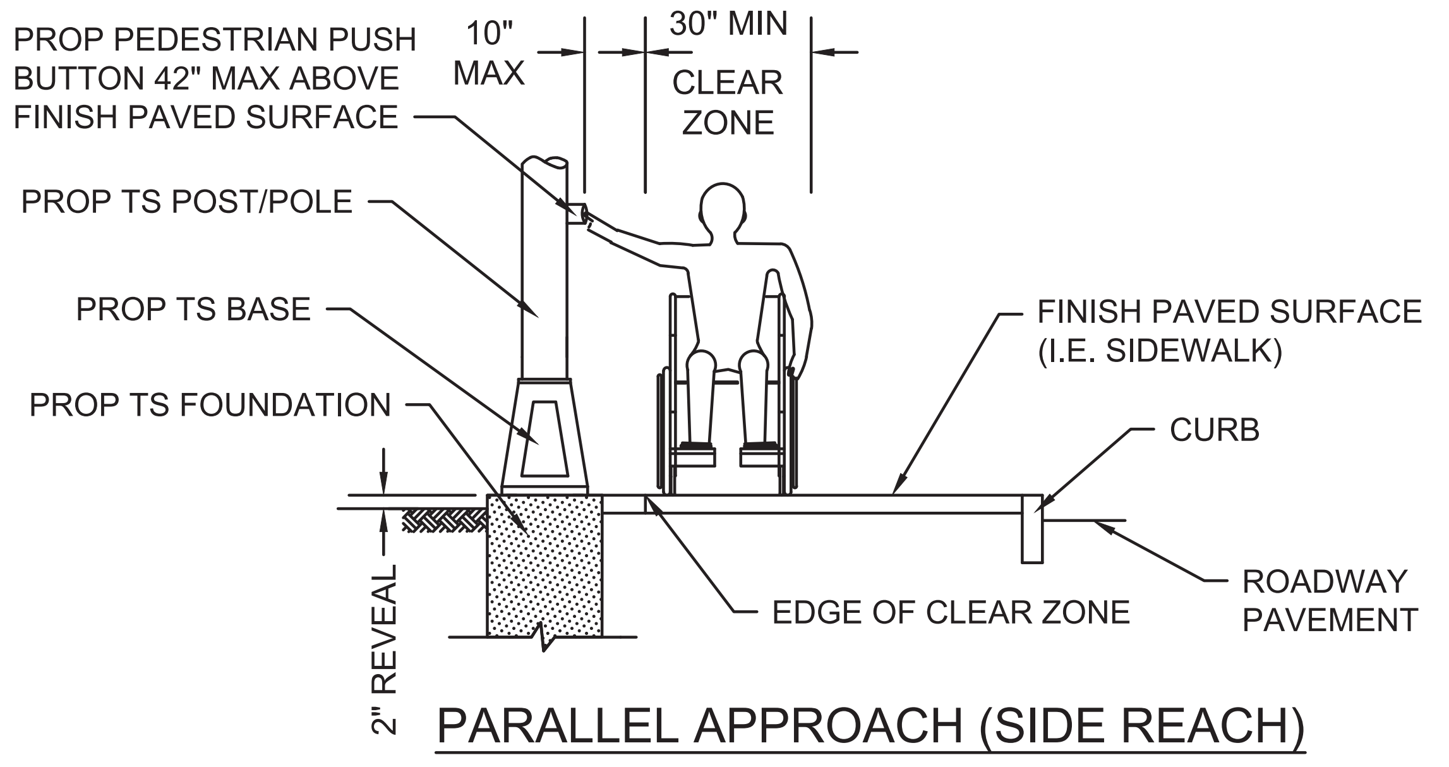
1. INSTALL SILT SACK IN EXISTING CATCH BASINS, BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED

INLET PROTECTION - SILT SACK IN CATCH BASIN

SCALE: N.T.S.


PROP PEDESTRIAN PUSH BUTTON 42" MAX ABOVE FINISH PAVED SURFACE
48" MIN
CLEAR ZONE
PROP TS POST/POLE
PROP TS BASE
PROP TS FOUNDATION
FINISH PAVED SURFACE (I.E. SIDEWALK)
CURB
ROADWAY PAVEMENT
2" REVEAL

FORWARD APPROACH (FORWARD REACH)



PARALLEL APPROACH (SIDE REACH)

NOTE:

A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.

a) WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL ABUT AND BE CENTERED ON THE CLEAR GROUND SPACE.

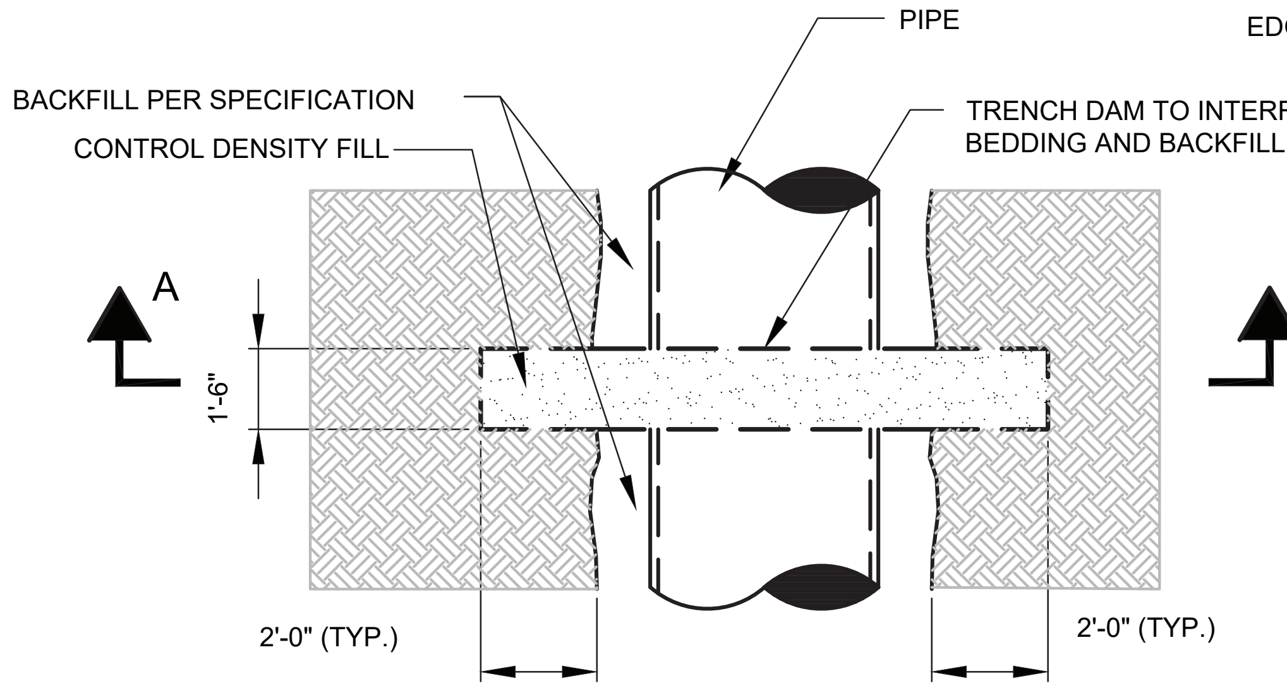
b) WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.

PEDESTRIAN PUSH BUTTON CLEAR ZONE

SCALE: N.T.S.   DWG: PM-10   DATE: APRIL 2013

NOTES:

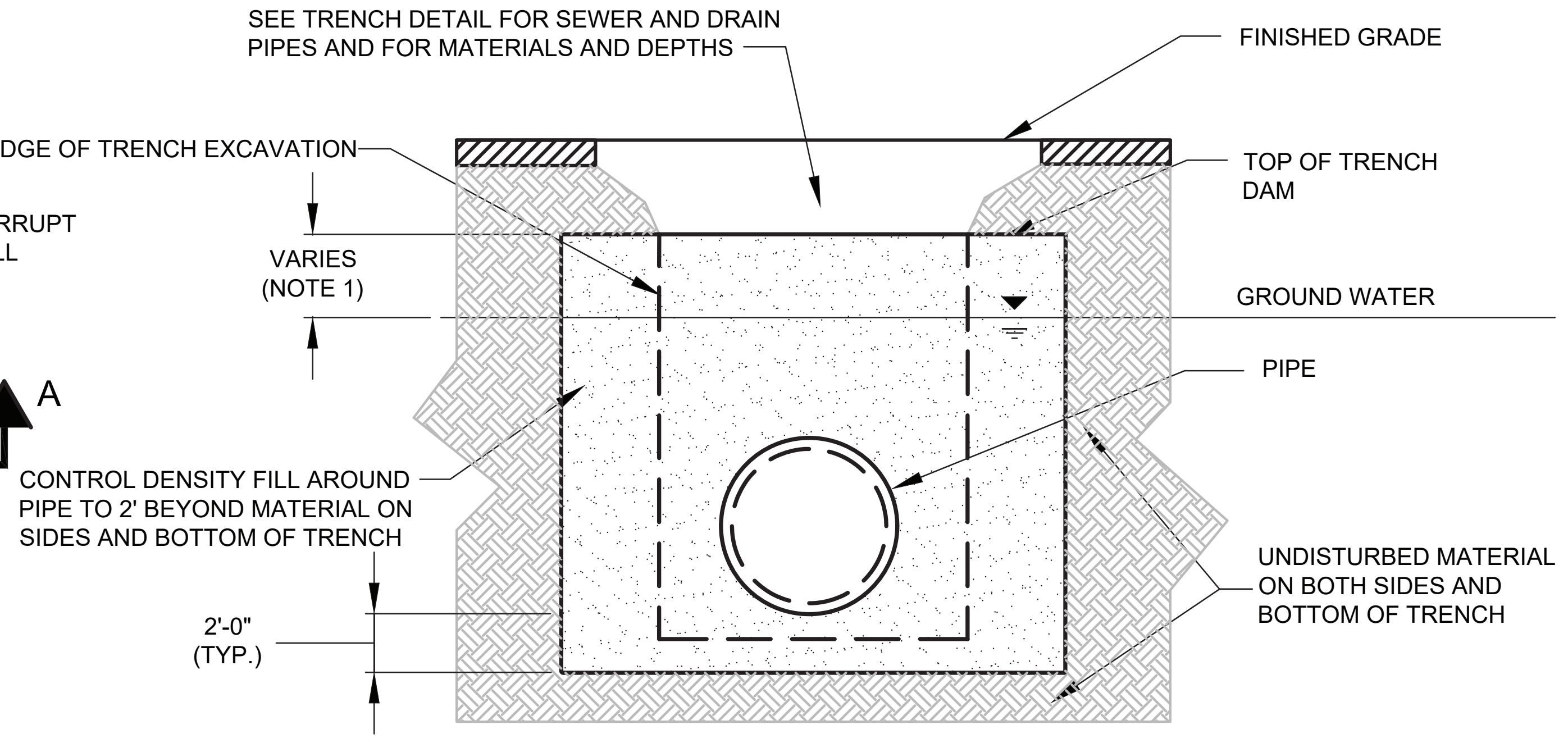
1. THE TOP OF THE TRENCH DAM SHALL EXTEND A MINIMUM OF 5'-0" ABOVE THE GROUND WATER LEVEL, AS DETERMINED BY THE NEAREST BORING OR BY THE ENGINEER, BUT SHALL NOT EXCEED A DEPTH OF 1'-0" BELOW FINISHED GRADE.
2. TRENCH DAMS SHALL BE INSTALLED AS INDICATED ON THE CONTRACT DRAWINGS OR AS DIRECTED BY THE ENGINEER.
3. IF PIPE MATERIAL IS DUCTILE IRON USE A NON FLY ASH BASED CONTROL DENSITY FILL
4. TRENCH DAMS SHALL BE PLACED AT THE BEGINNING AND END LIMITS OF ALL TRENCHES EXCAVATED DURING A WORK DAY AND SHALL BE INTERMITTENTLY SPACED AT 100' MAXIMUM WITHIN THESE LIMITS. TRENCH DAMS SHALL BE PLACED NEAR THE PROPERTY LINE, WITHIN STATE OR CITY LAYOUT, FOR ALL SERVICE CONNECTIONS.


PIPE
BACKFILL PER SPECIFICATION
CONTROL DENSITY FILL
TRENCH DAM TO INTERRUPT BEDDING AND BACKFILL
A
A
1'-6"
2'-0" (TYP.)
2'-0" (TYP.)

PLAN

NOTES:

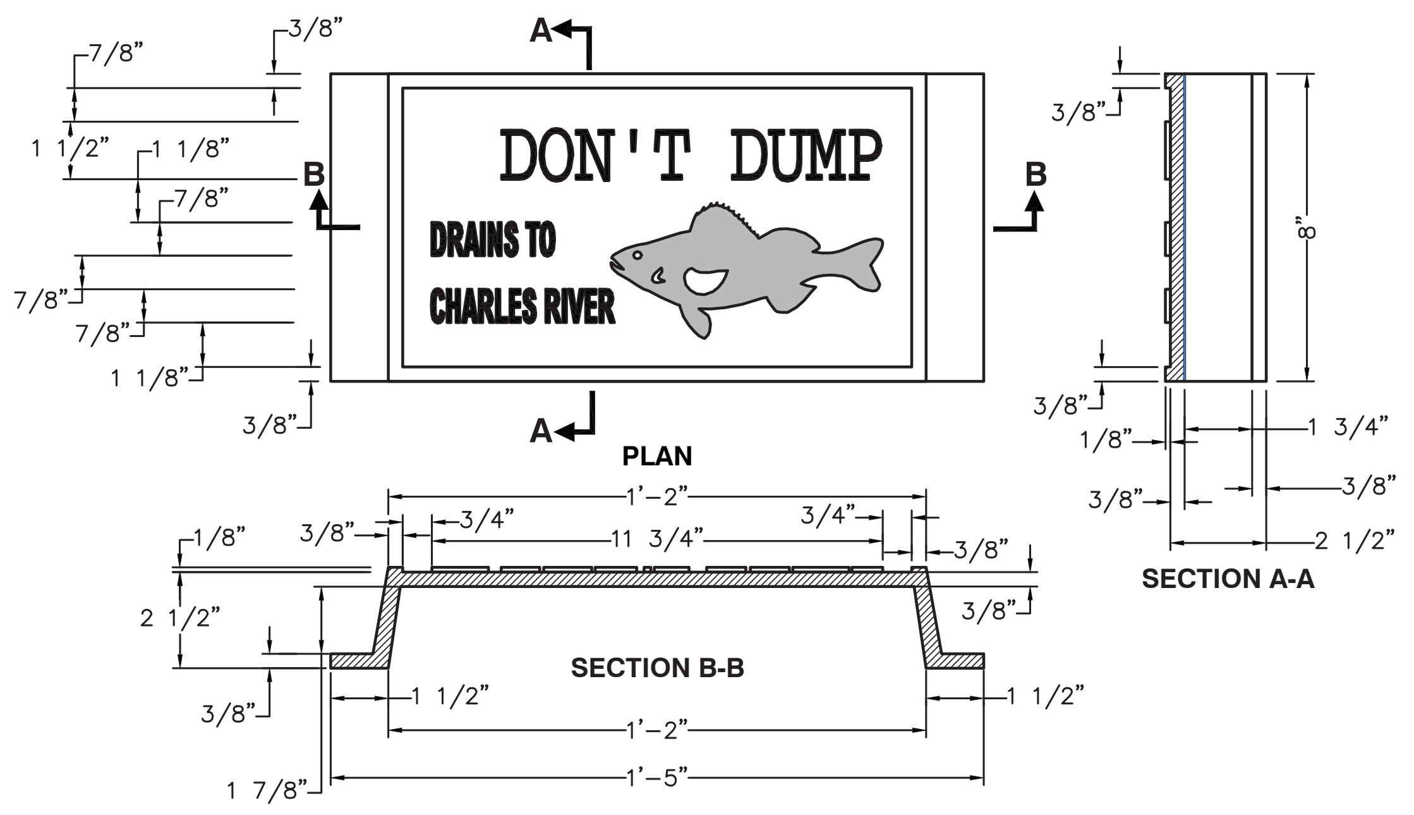
1. NOTCH TRENCH DAM A MINIMUM OF 2'-0" BEYOND UNDISTURBED MATERIAL ON SIDES AND BOTTOM OF TRENCH.


SEE TRENCH DETAIL FOR SEWER AND DRAIN PIPES AND FOR MATERIALS AND DEPTHS
FINISHED GRADE
EDGE OF TRENCH EXCAVATION
TOP OF TRENCH DAM
VARIES (NOTE 1)
GROUND WATER
PIPE
CONTROL DENSITY FILL AROUND PIPE TO 2' BEYOND MATERIAL ON SIDES AND BOTTOM OF TRENCH
UNDISTURBED MATERIAL ON BOTH SIDES AND BOTTOM OF TRENCH
2'-0" (TYP.)

SECTION A-A

TRENCH DAM

SCALE: N.T.S.



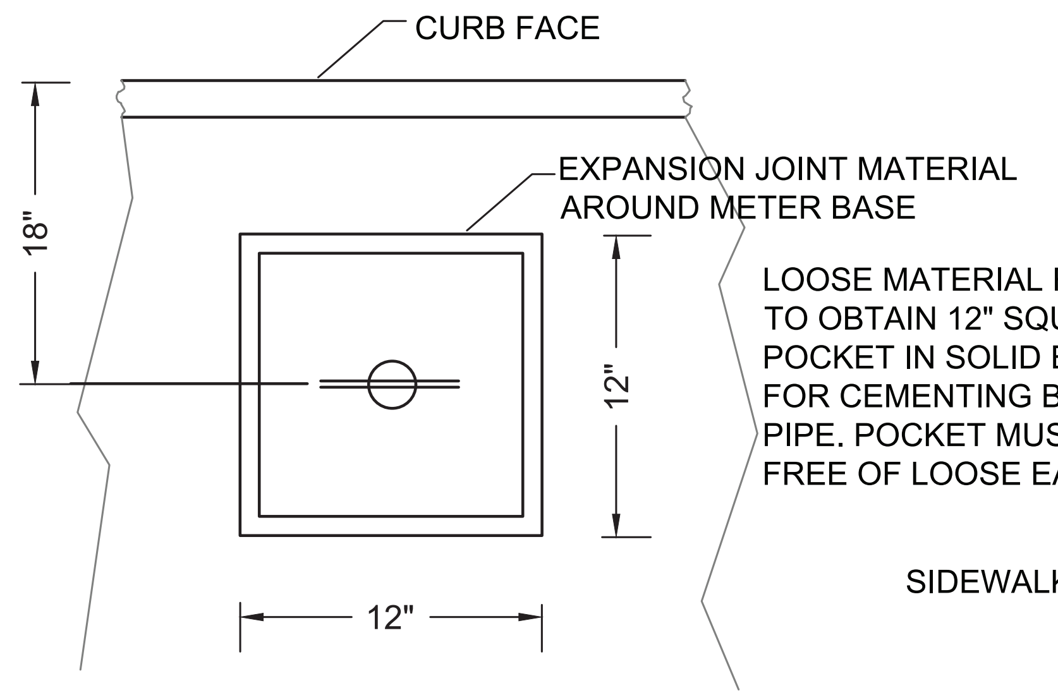
NOTE:

ALL CASTINGS SHALL BE MANUFACTURED FROM GRAY IRON CONFORMING TO ASTM A48 CLASS 35B AND/OR AASHTO M105 CLASS 35B.

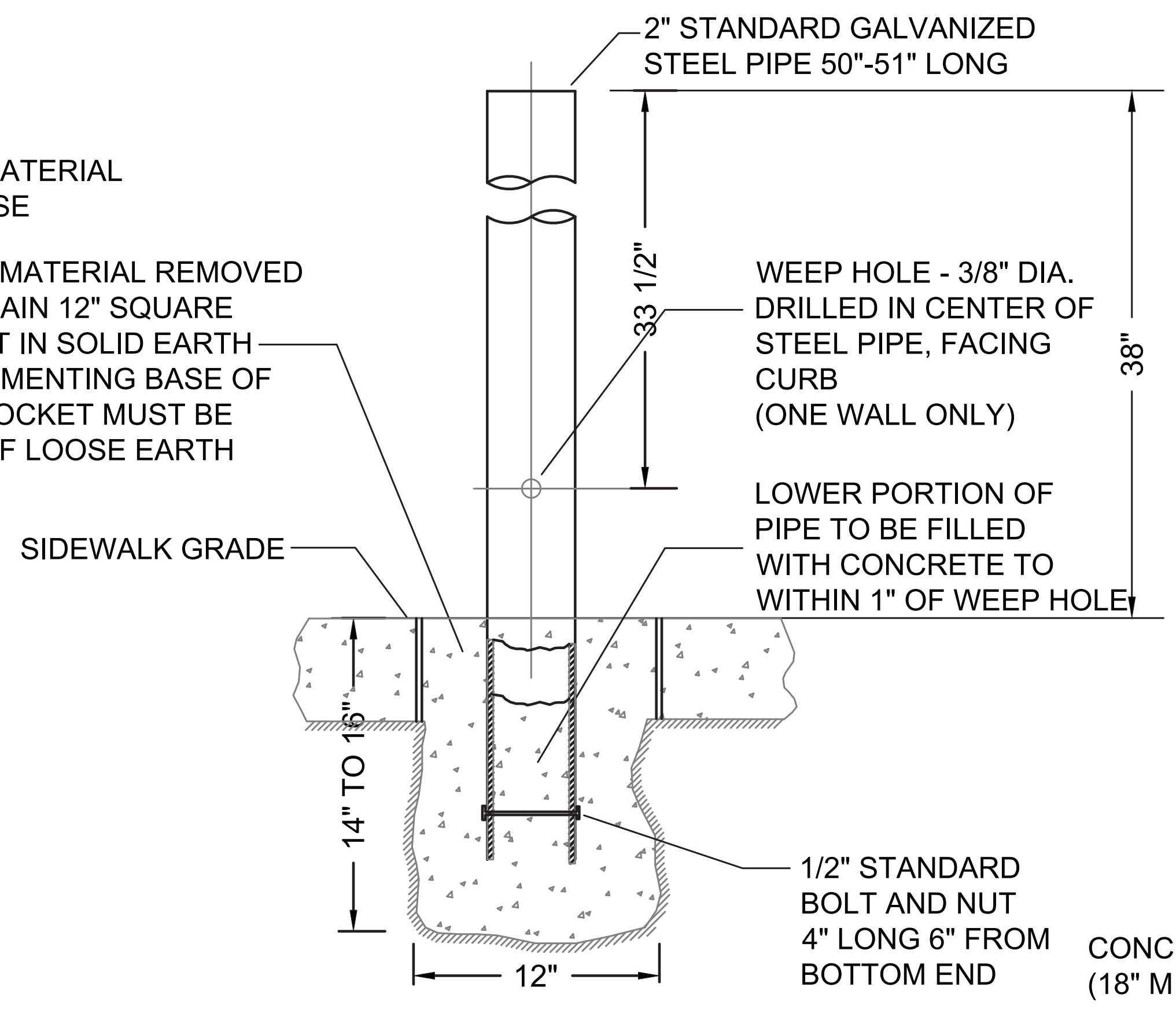
"DON'T DUMP" SIGN

SCALE: N.T.S.

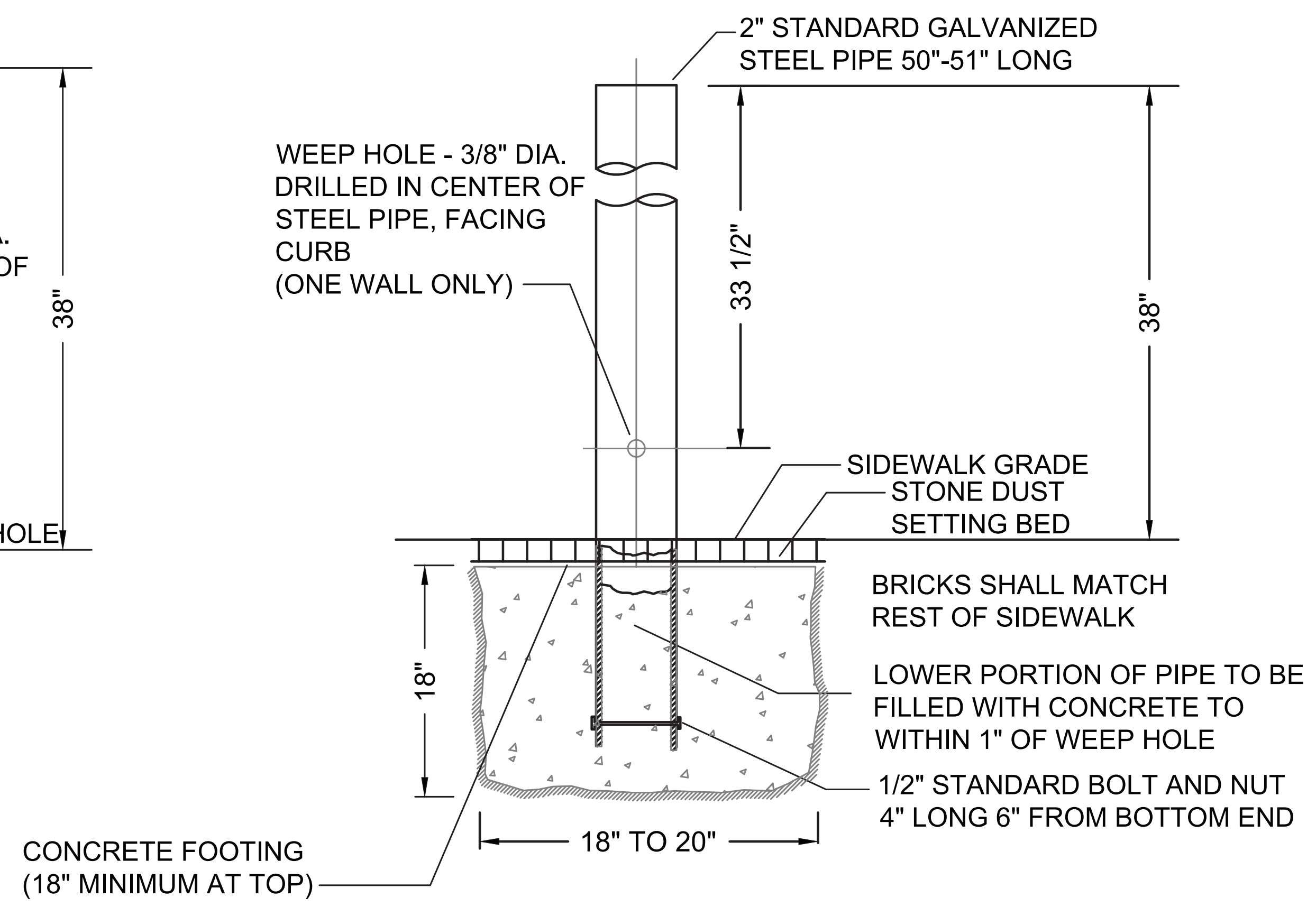
CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION DETAILS
SHEET 91 OF 120



PLAN - PARKING METER POST


2" STANDARD GALVANIZED STEEL PIPE 50"-51" LONG
LOOSE MATERIAL REMOVED TO OBTAIN 12" SQUARE POCKET IN SOLID EARTH FOR CEMENTING BASE OF PIPE. POCKET MUST BE FREE OF LOOSE EARTH
WEEP HOLE - 3/8" DIA. DRILLED IN CENTER OF STEEL PIPE, FACING CURB (ONE WALL ONLY)
33 1/2"
38"
LOWER PORTION OF PIPE TO BE FILLED WITH CONCRETE TO WITHIN 1" OF WEEP HOLE
SIDEWALK GRADE
14" TO 16"
12"
1/2" STANDARD BOLT AND NUT 4" LONG 6" FROM BOTTOM END

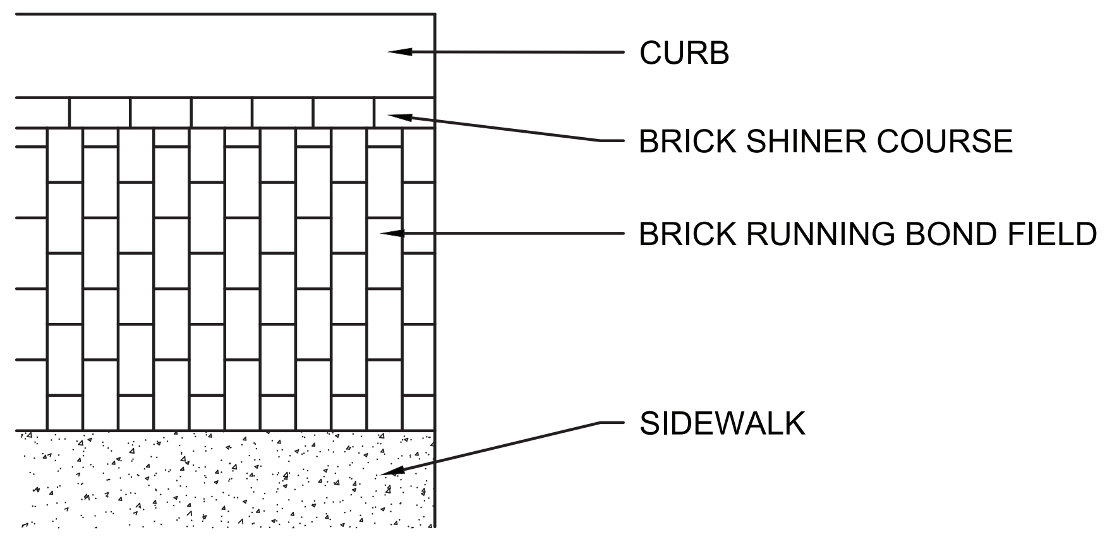
SECTION - PARKING METER POST, CONCRETE SIDEWALK


2" STANDARD GALVANIZED STEEL PIPE 50"-51" LONG
WEEP HOLE - 3/8" DIA. DRILLED IN CENTER OF STEEL PIPE, FACING CURB (ONE WALL ONLY)
33 1/2"
38"
SIDEWALK GRADE
STONE DUST SETTING BED
BRICKS SHALL MATCH REST OF SIDEWALK
18"
LOWER PORTION OF PIPE TO BE FILLED WITH CONCRETE TO WITHIN 1" OF WEEP HOLE
1/2" STANDARD BOLT AND NUT 4" LONG 6" FROM BOTTOM END
CONCRETE FOOTING (18" MINIMUM AT TOP)
18" TO 20"

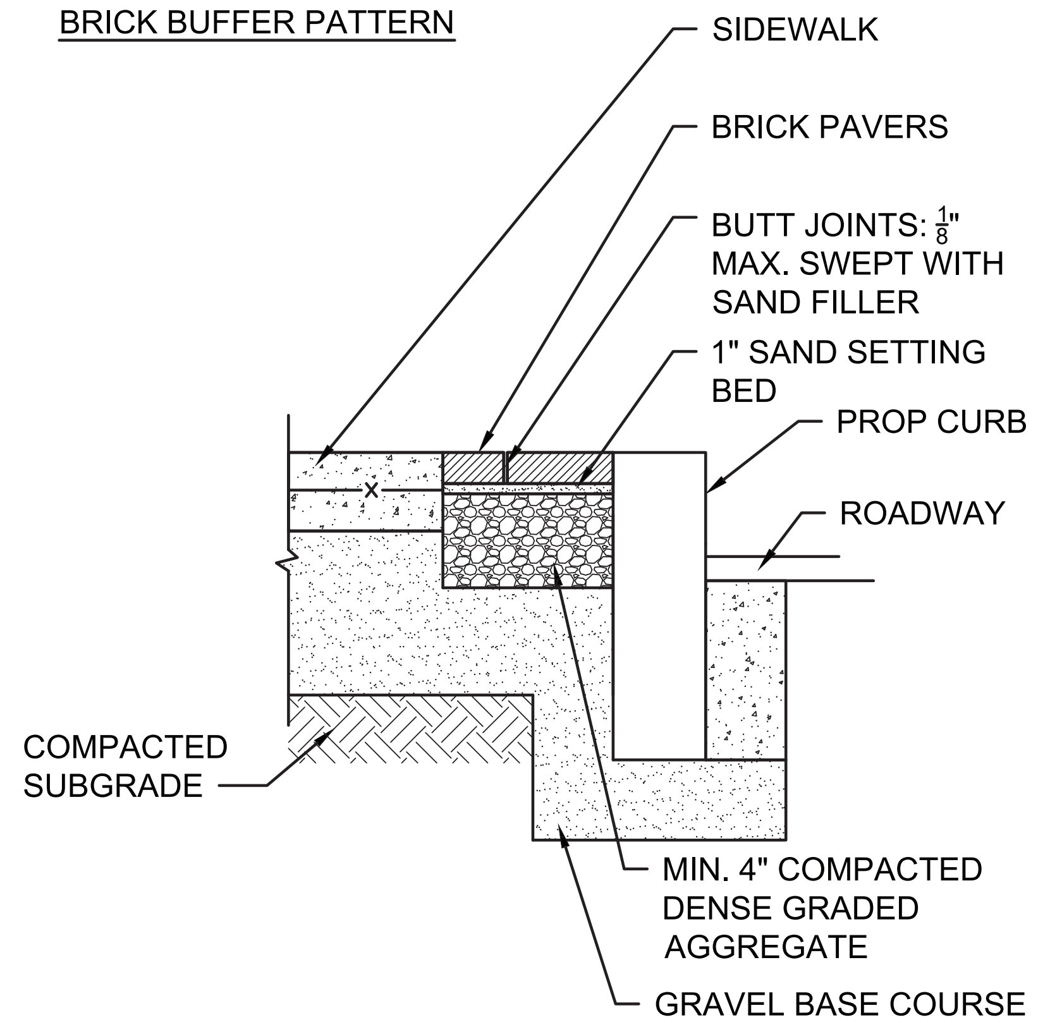
SECTION - PARKING METER POST, BRICK SIDEWALK

PARKING METER POST INSTALLATION - CITY OF CAMBRIDGE STANDARD

SCALE: N.T.S.



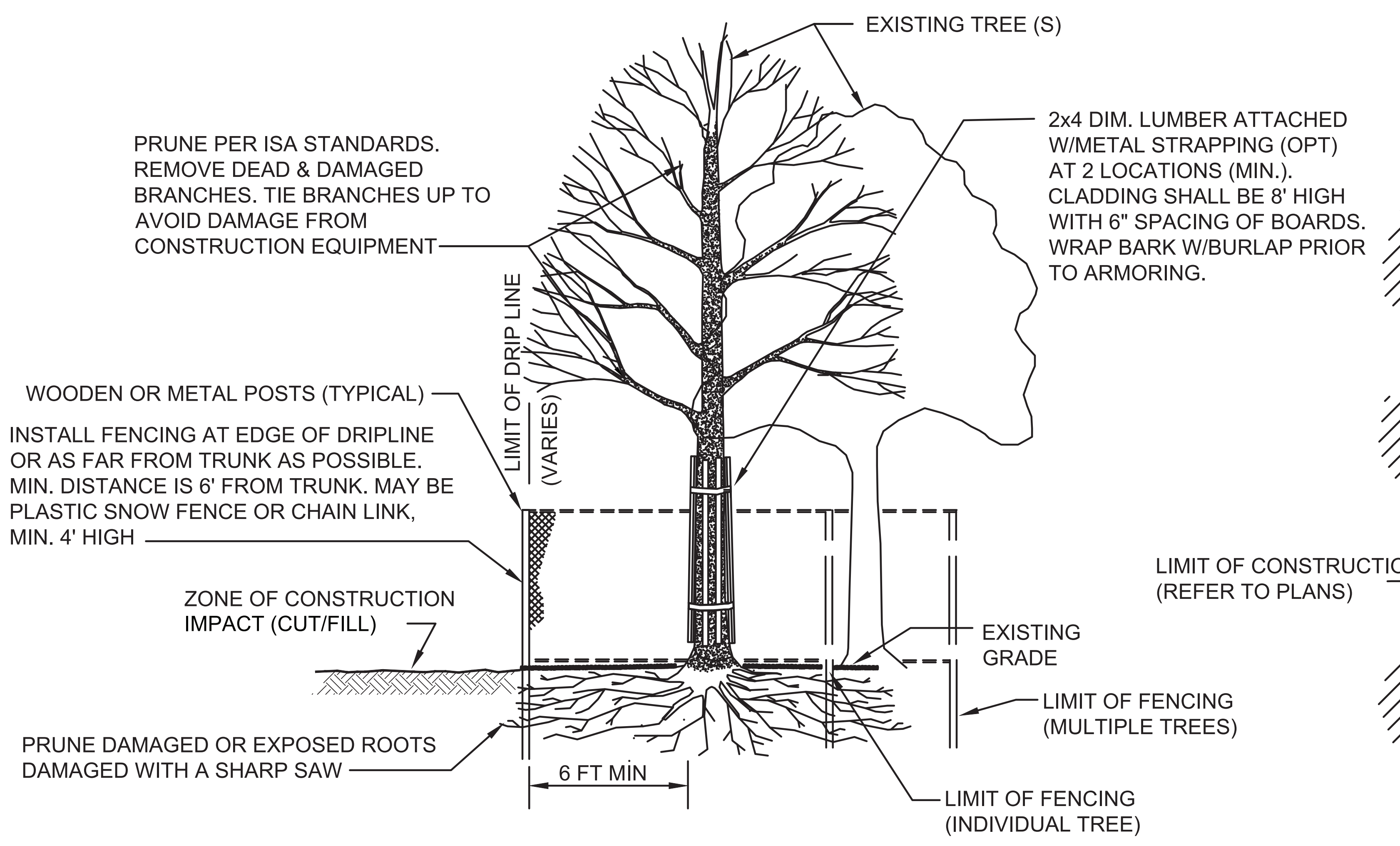
BRICK BUFFER PATTERN


SIDEWALK
BRICK PAVERS
BUTT JOINTS: $\frac{1}{8}$" MAX. SWEPT WITH SAND FILLER
1" SAND SETTING BED
PROP CURB
ROADWAY
COMPACTED SUBGRADE
MIN. 4" COMPACTED DENSE GRADED AGGREGATE
GRAVEL BASE COURSE
X

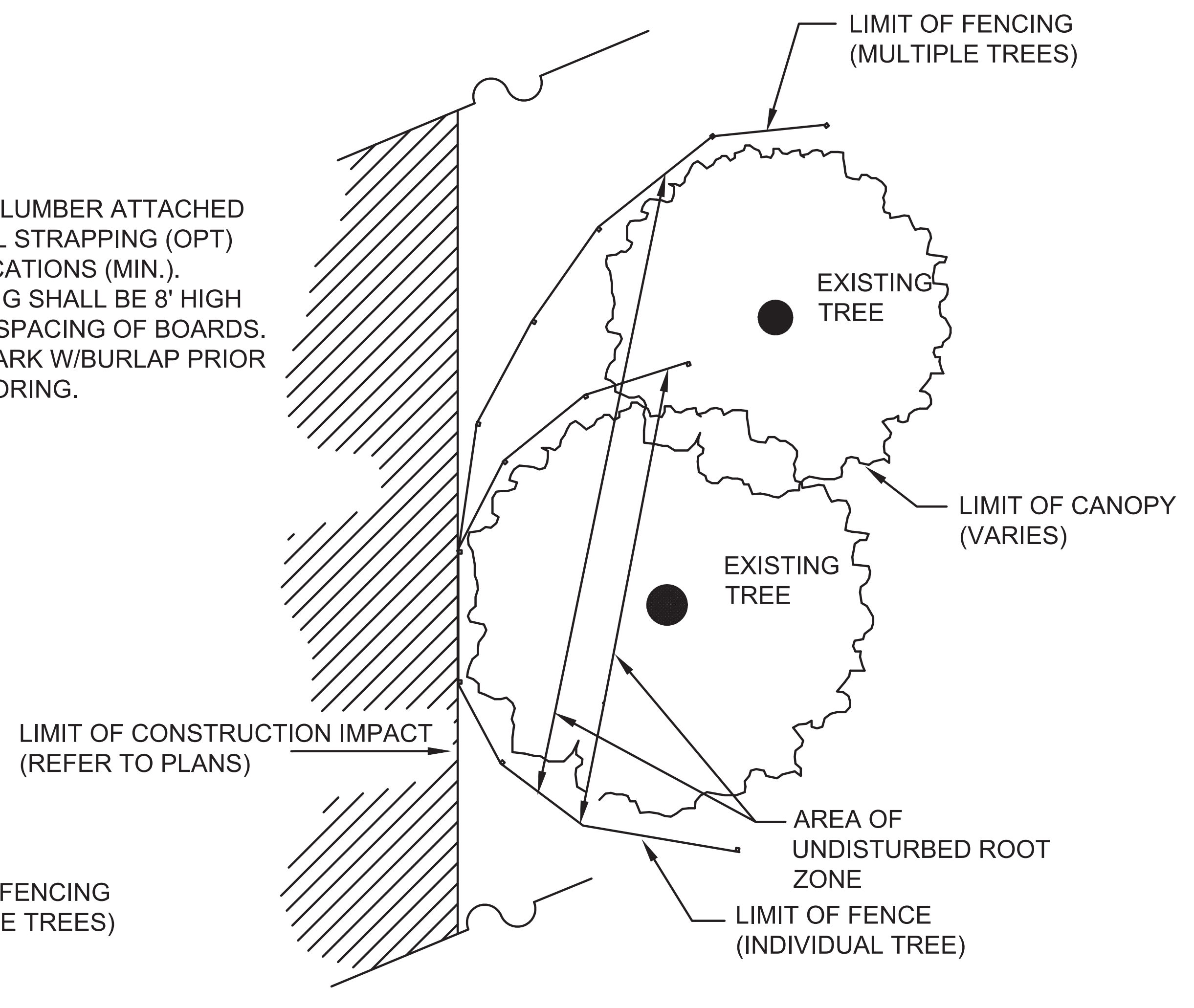
* 0.5% TOLERANCE FOR CONSTRUCTION

BRICK BUFFER

SCALE: N.T.S.


EXISTING TREE (S)
PRUNE PER ISA STANDARDS. REMOVE DEAD & DAMAGED BRANCHES. TIE BRANCHES UP TO AVOID DAMAGE FROM CONSTRUCTION EQUIPMENT
2x4 DIM. LUMBER ATTACHED W/METAL STRAPPING (OPT) AT 2 LOCATIONS (MIN.). CLADDING SHALL BE 8' HIGH WITH 6" SPACING OF BOARDS. WRAP BARK W/BURLAP PRIOR TO ARMORING.
LIMIT OF DRIP LINE (VARIES)
WOODEN OR METAL POSTS (TYPICAL)
INSTALL FENCING AT EDGE OF DRIPLINE OR AS FAR FROM TRUNK AS POSSIBLE. MIN. DISTANCE IS 6' FROM TRUNK. MAY BE PLASTIC SNOW FENCE OR CHAIN LINK, MIN. 4' HIGH
ZONE OF CONSTRUCTION IMPACT (CUT/FILL)
EXISTING GRADE
LIMIT OF FENCING (MULTIPLE TREES)
PRUNE DAMAGED OR EXPOSED ROOTS DAMAGED WITH A SHARP SAW
6 FT MIN
LIMIT OF FENCING (INDIVIDUAL TREE)

NO STORAGE OF EQUIPMENT OR STOCKPILING OF MATERIALS WITHIN DRIPLINE


LIMIT OF FENCING (MULTIPLE TREES)
EXISTING TREE
LIMIT OF CANOPY (VARIES)
EXISTING TREE
LIMIT OF CONSTRUCTION IMPACT (REFER TO PLANS)
AREA OF UNDISTURBED ROOT ZONE
LIMIT OF FENCE (INDIVIDUAL TREE)

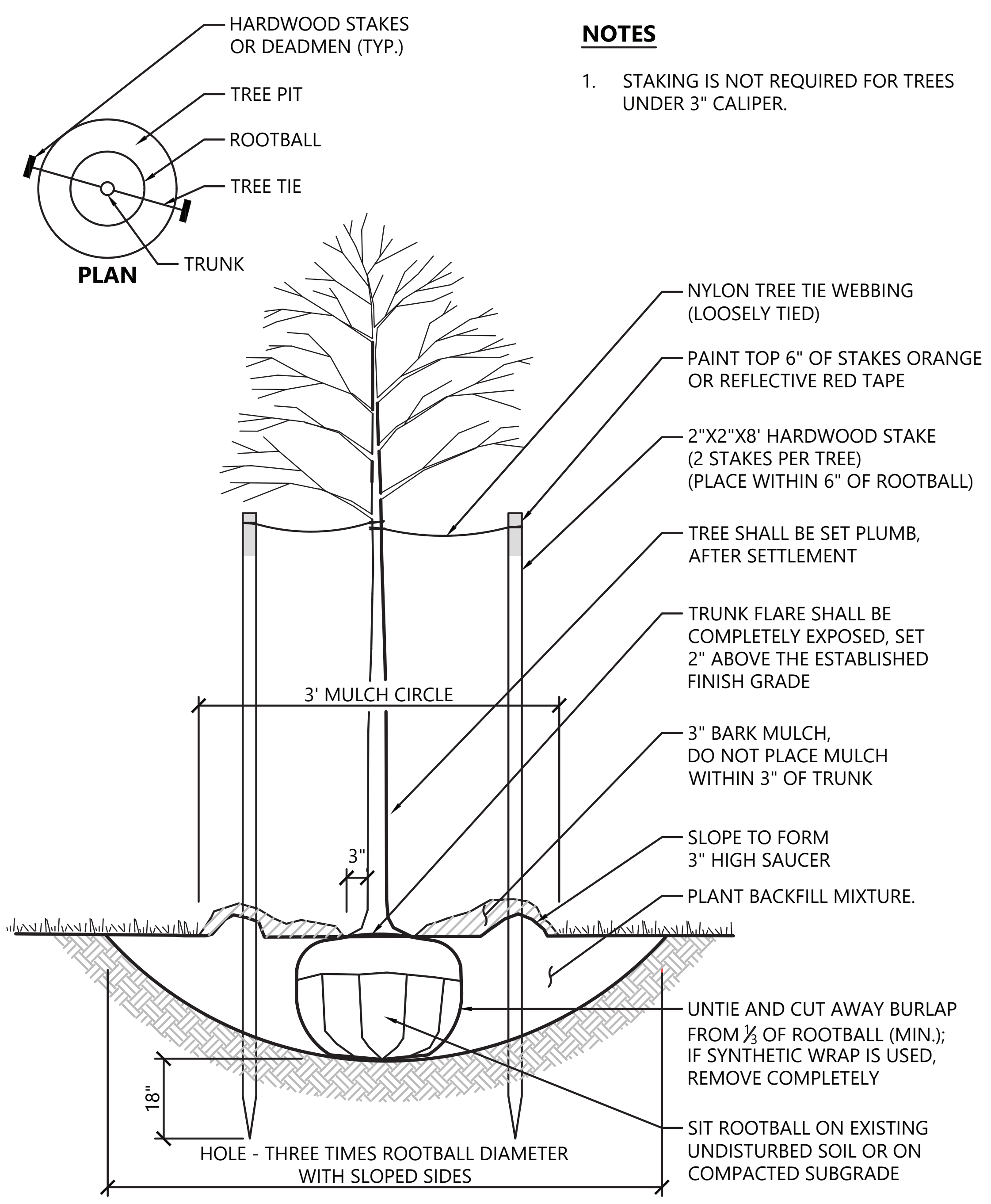
PLAN VIEW

TREE PROTECTION

SCALE: N.T.S.

CAMBRIDGE
O'BRIEN HIGHWAY
CONSTRUCTION DETAILS
SHEET 92 OF 120

11554-DET-LA.DWG Plotted on 13-Jul-2021 12:13 PM

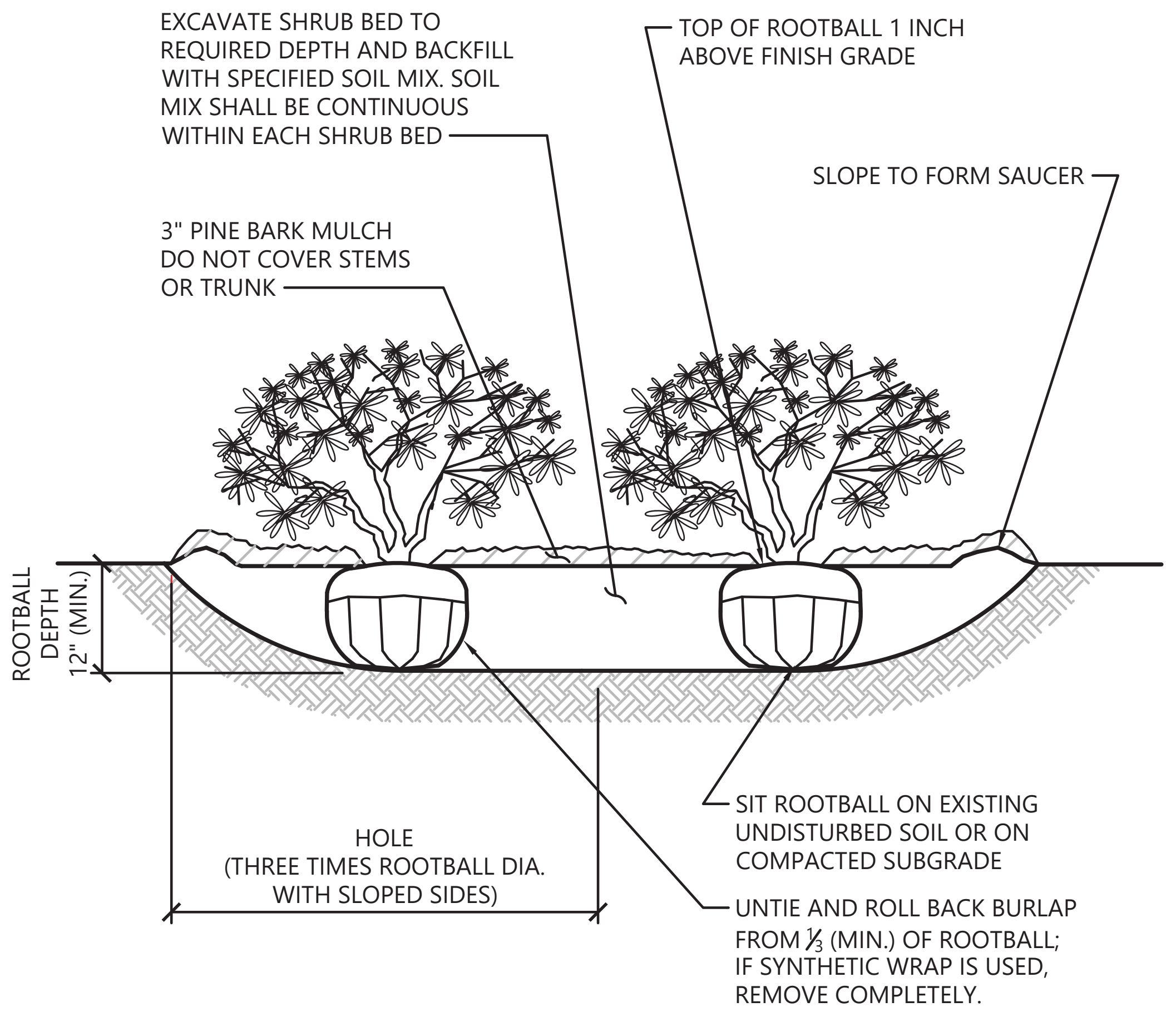

HARDWOOD STAKES OR DEADMEN (TYP.)
TREE PIT
ROOTBALL
TREE TIE
TRUNK
PLAN
NYLON TREE TIE WEBBING (LOOSELY TIED)
PAINT TOP 6" OF STAKES ORANGE OR REFLECTIVE RED TAPE
2"X2"X8' HARDWOOD STAKE (2 STAKES PER TREE) (PLACE WITHIN 6" OF ROOTBALL)
TREE SHALL BE SET PLUMB, AFTER SETTLEMENT
TRUNK FLARE SHALL BE COMPLETELY EXPOSED, SET 2" ABOVE THE ESTABLISHED FINISH GRADE
3" BARK MULCH, DO NOT PLACE MULCH WITHIN 3" OF TRUNK
SLOPE TO FORM 3" HIGH SAUCER
PLANT BACKFILL MIXTURE.
3' MULCH CIRCLE
3"
UNTIE AND CUT AWAY BURLAP FROM ⅓ OF ROOTBALL (MIN.); IF SYNTHETIC WRAP IS USED, REMOVE COMPLETELY
SIT ROOTBALL ON EXISTING UNDISTURBED SOIL OR ON COMPACTED SUBGRADE
18"
HOLE - THREE TIMES ROOTBALL DIAMETER WITH SLOPED SIDES

NOTES

1. STAKING IS NOT REQUIRED FOR TREES UNDER 3" CALIPER.

TREE PLANTING (FOR TREES UNDER 4" CALIPER)

SCALE: N.T.S.


EXCAVATE SHRUB BED TO REQUIRED DEPTH AND BACKFILL WITH SPECIFIED SOIL MIX. SOIL MIX SHALL BE CONTINUOUS WITHIN EACH SHRUB BED
TOP OF ROOTBALL 1 INCH ABOVE FINISH GRADE
SLOPE TO FORM SAUCER
3" PINE BARK MULCH DO NOT COVER STEMS OR TRUNK
ROOTBALL DEPTH 12" (MIN.)
HOLE (THREE TIMES ROOTBALL DIA. WITH SLOPED SIDES)
SIT ROOTBALL ON EXISTING UNDISTURBED SOIL OR ON COMPACTED SUBGRADE
UNTIE AND ROLL BACK BURLAP FROM ⅓ (MIN.) OF ROOTBALL; IF SYNTHETIC WRAP IS USED, REMOVE COMPLETELY.

NOTES

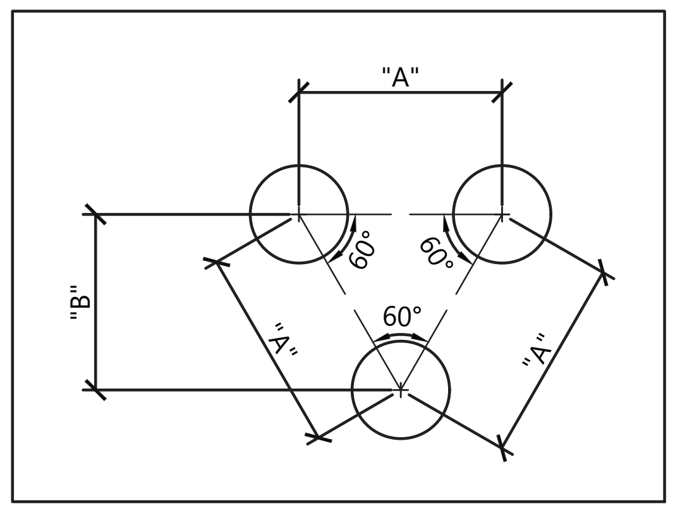
1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

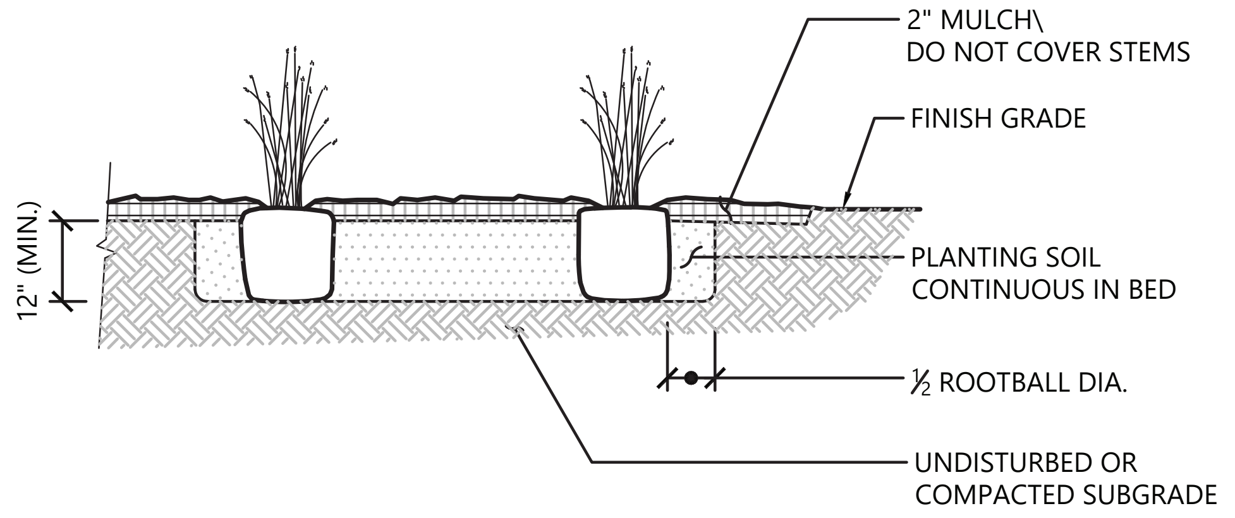
SHRUB BED PLANTING

SCALE: N.T.S.

PLANT SPACING

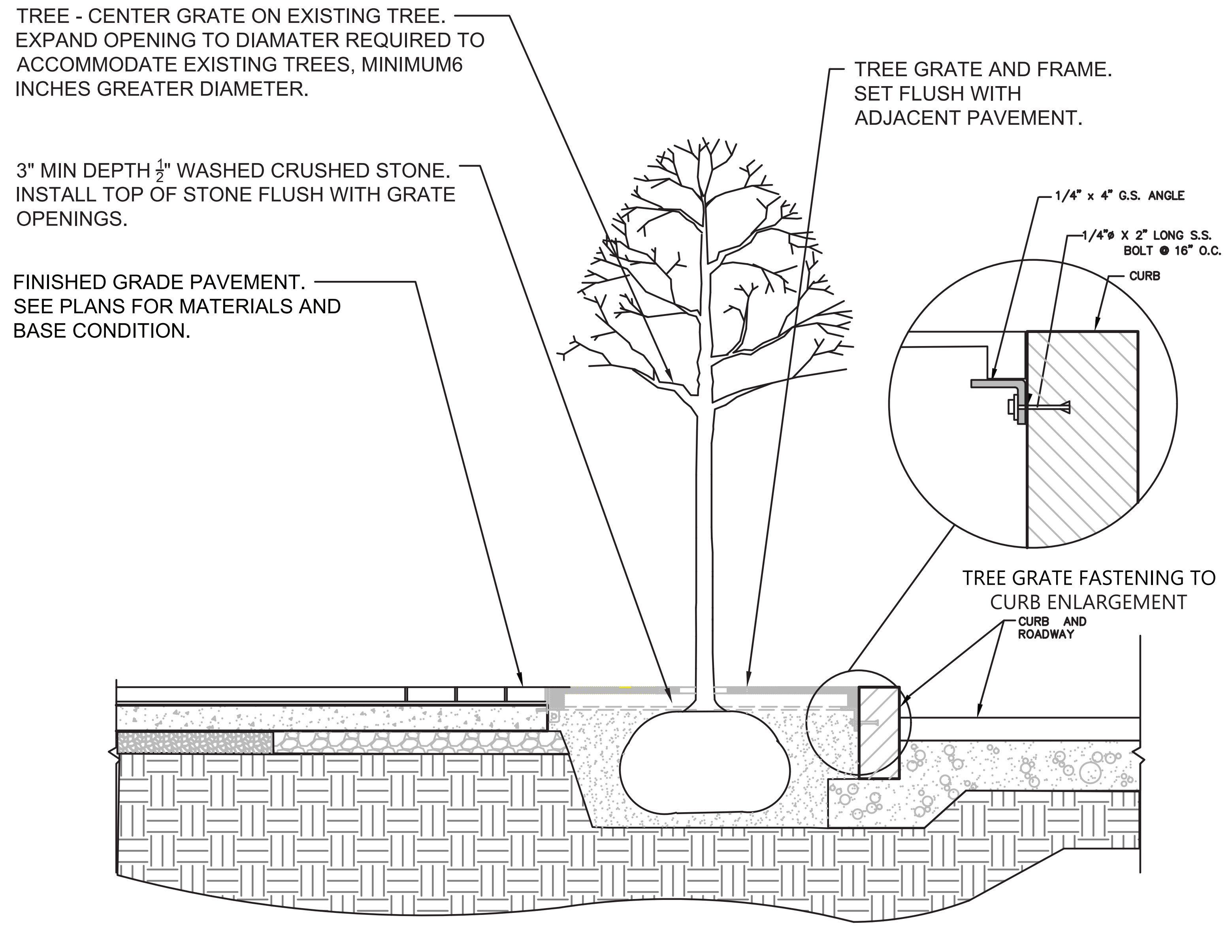
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8 ½ IN. O.C.
12 IN. O.C.	10 ½ IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.




2" MULCH\ DO NOT COVER STEMS
FINISH GRADE
12" (MIN.)
PLANTING SOIL CONTINUOUS IN BED
½ ROOTBALL DIA.
UNDISTURBED OR COMPACTED SUBGRADE

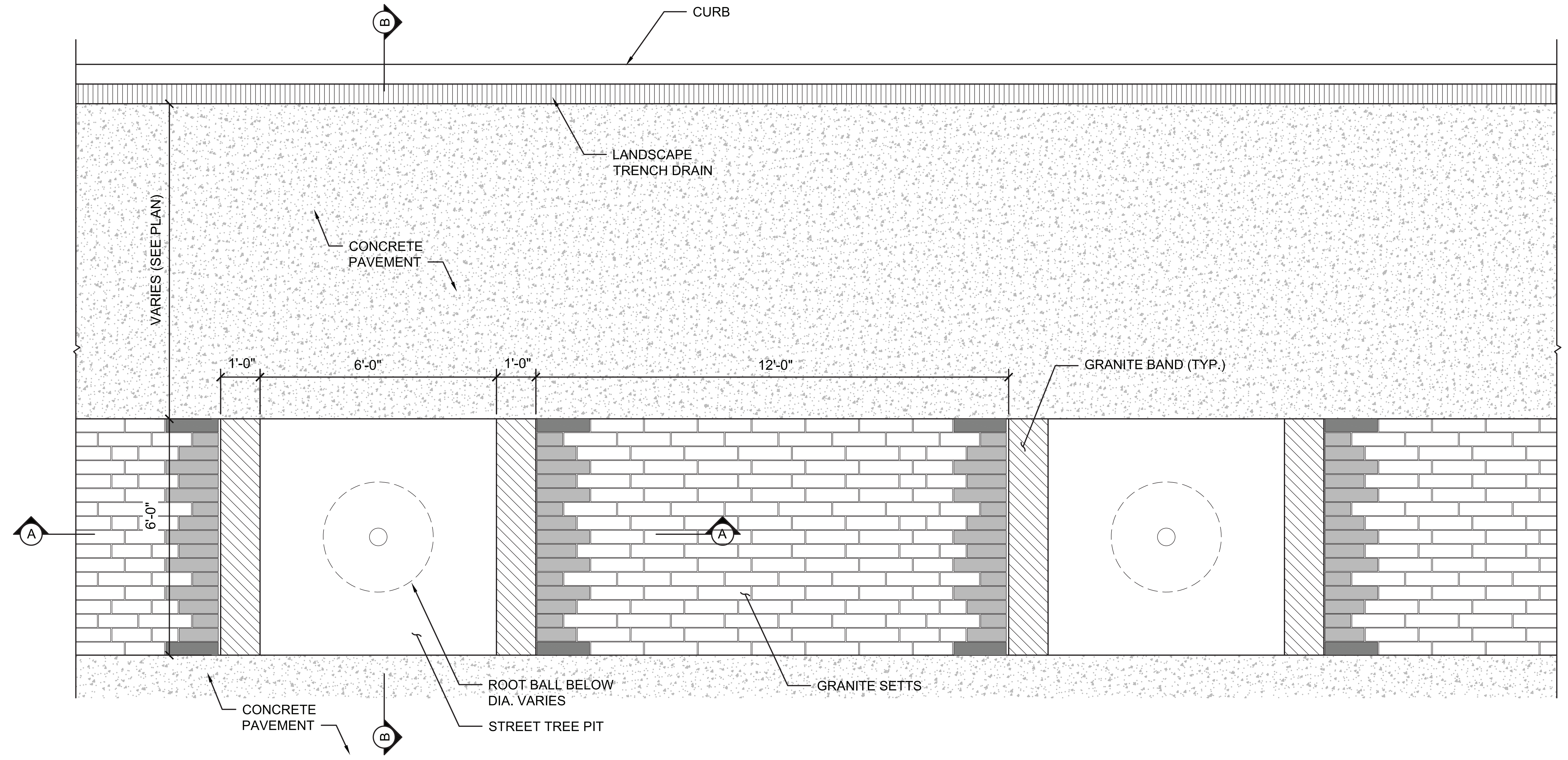
PERENNIAL AND ORNAMENTAL GRASS PLANTING

SCALE: N.T.S.


TREE - CENTER GRATE ON EXISTING TREE. EXPAND OPENING TO DIAMATER REQUIRED TO ACCOMMODATE EXISTING TREES, MINIMUM6 INCHES GREATER DIAMETER.
TREE GRATE AND FRAME. SET FLUSH WITH ADJACENT PAVEMENT.
3" MIN DEPTH ½" WASHED CRUSHED STONE. INSTALL TOP OF STONE FLUSH WITH GRATE OPENINGS.
FINISHED GRADE PAVEMENT. SEE PLANS FOR MATERIALS AND BASE CONDITION.
1/4" x 4" G.S. ANGLE
1/4"ø X 2" LONG S.S. BOLT @ 16" O.C.
CURB
TREE GRATE FASTENING TO CURB ENLARGEMENT
CURB AND ROADWAY

TREE GRATE AT EXISTING TREES

SCALE: N.T.S.



NORTH FIRST STREET TREEWAY - PLAN VIEW

SCALE: 1/2" = 1'-0"

PAVING LAYOUT NOTES:

1 Pavers are 4” wide x 16” long x 3” deep. Joints shall be 3/8” wide or less.

2 Paving limits are established by the number of paver rows and number of full pavers shown on the plan dimensions. Numerical dimensions are given for convenience but the number of rows and full pavers prevail in the layout of the pavement, benches, and plant bed.

3 Begin pavement layout (P.O.B.) at the short ends of the paving field as noted on the plan.

4 Use a full paver at every corner of the pavement as shown on the plan.

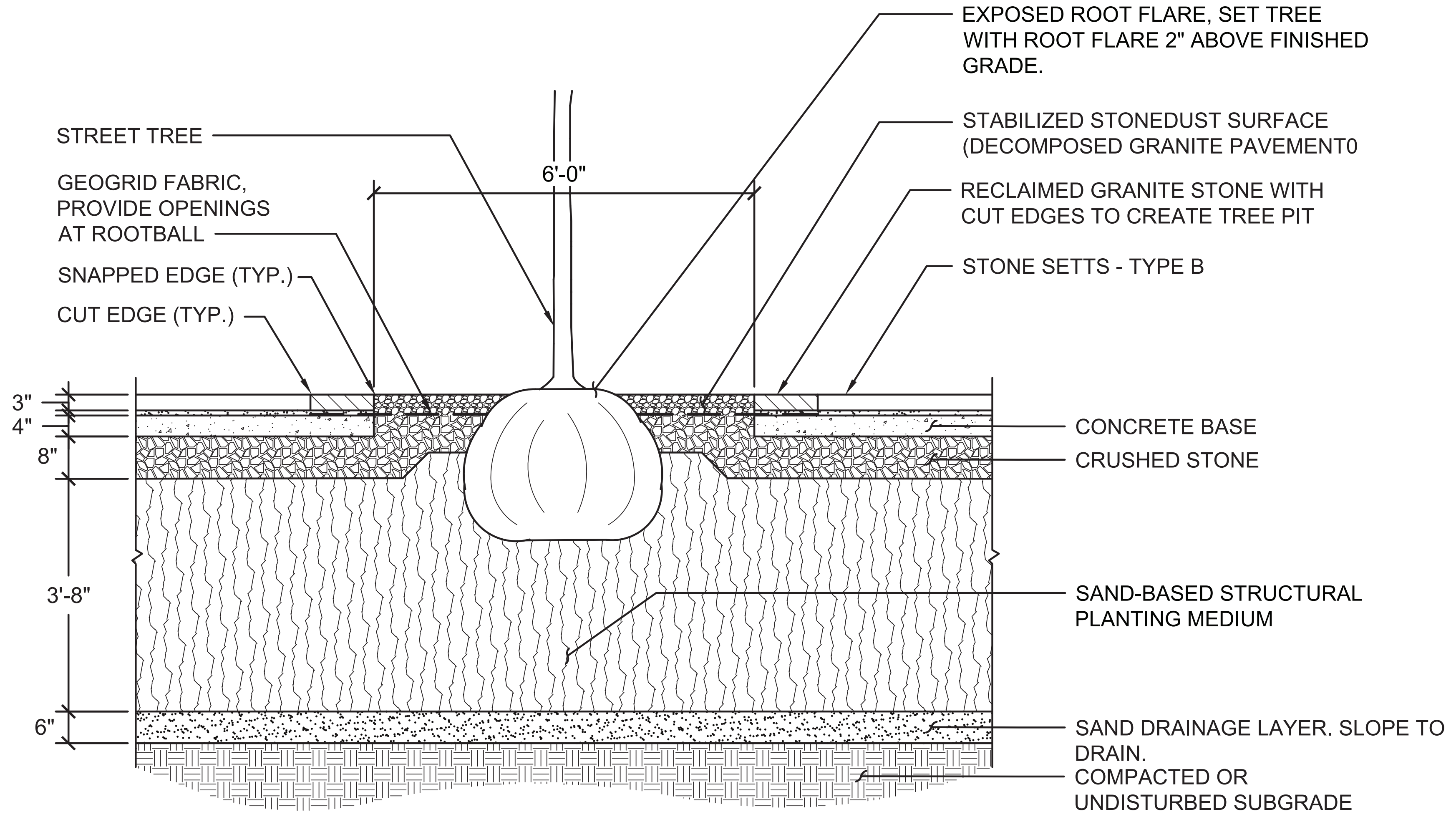
5 When starting the paving at the P.O.B., use 16”, 12”, and 8” lengths and arrange them randomly so that no paver joints align.

6 For the paving field pattern:
  a. Use full pavers to make the paving field except as noted below
  b. Lay pavers so that joints in adjacent rows do not align.
  c. If aligned joints cannot be avoided, Contractor may use pavers that range between 15” to 8” long. However, use of shorter pavers shall be limited and, where used, should be widely distributed so at not to detract from the overall pattern of the 4" x

7 Where pavers abut utility covers, hand cut pavers to fit tightly around cover with 3/8” jt max. Paver lengths shall be no less than 4” long.

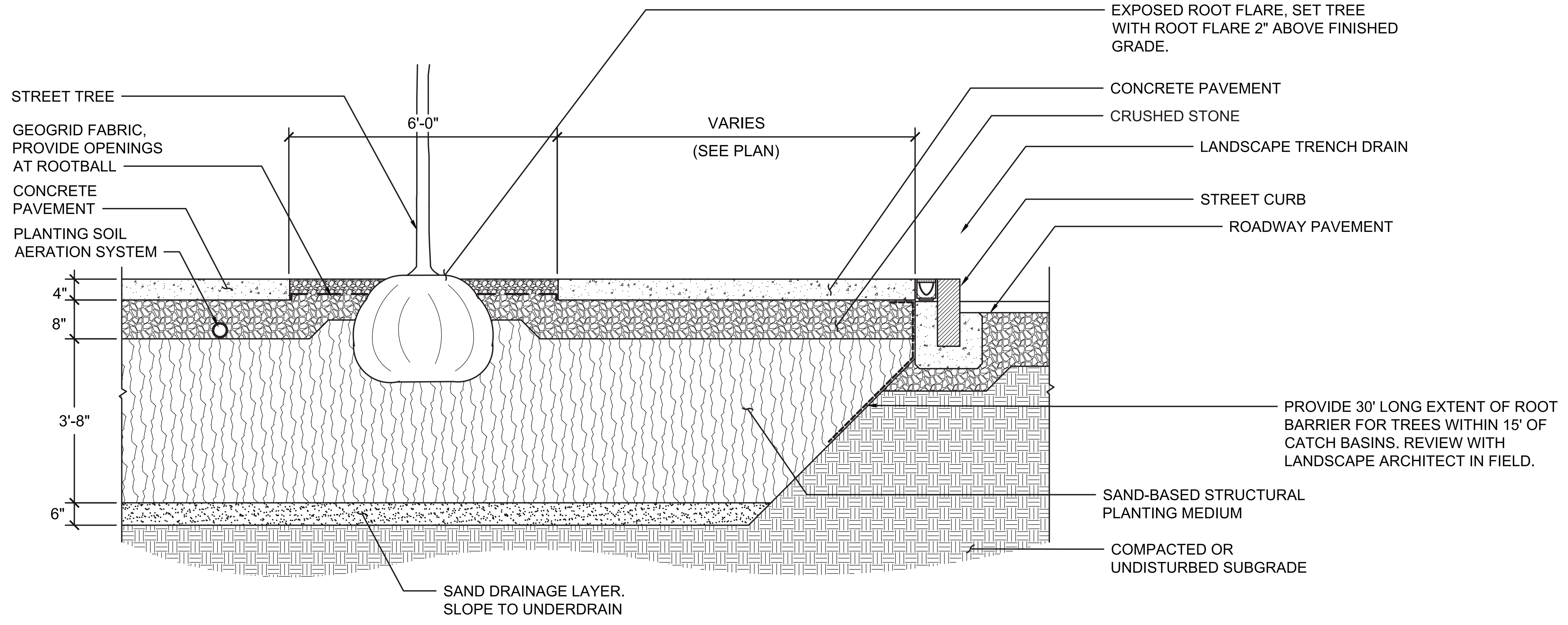
NORTH FIRST STREET TREEWAY PLANTING NOTES:

1. CONSTRUCTION OF NORTH FIRST STREET TREEWAYS SHALL MATCH INSTALLED CONDITIONS OF TREES IN TREEWAYS ALONG NORTH FIRST STREET WITHIN THE CAMBRIDGE COMMONS PROJECT.



NORTH FIRST STREET TREEWAY - SECTION A-A

SCALE: 1/2" = 1'-0"



NORTH FIRST STREET TREEWAY - SECTION B-B

SCALE: 1/2" = 1'-0"

CAMBRIDGE
O'BRIEN HIGHWAY
WCR DWY & SBL DETAILS
SHEET 94 OF 120

NOTES:
*TRANSITION IS CURVED, SEE PLANS FOR ADDITIONAL INFORMATION.
**TOLERANCE FOR CONSTRUCTION ±0.5%
NEGATIVE (-) ROADWAY GUTTER SLOPE DENOTES A LOW SIDE TRANSITION.

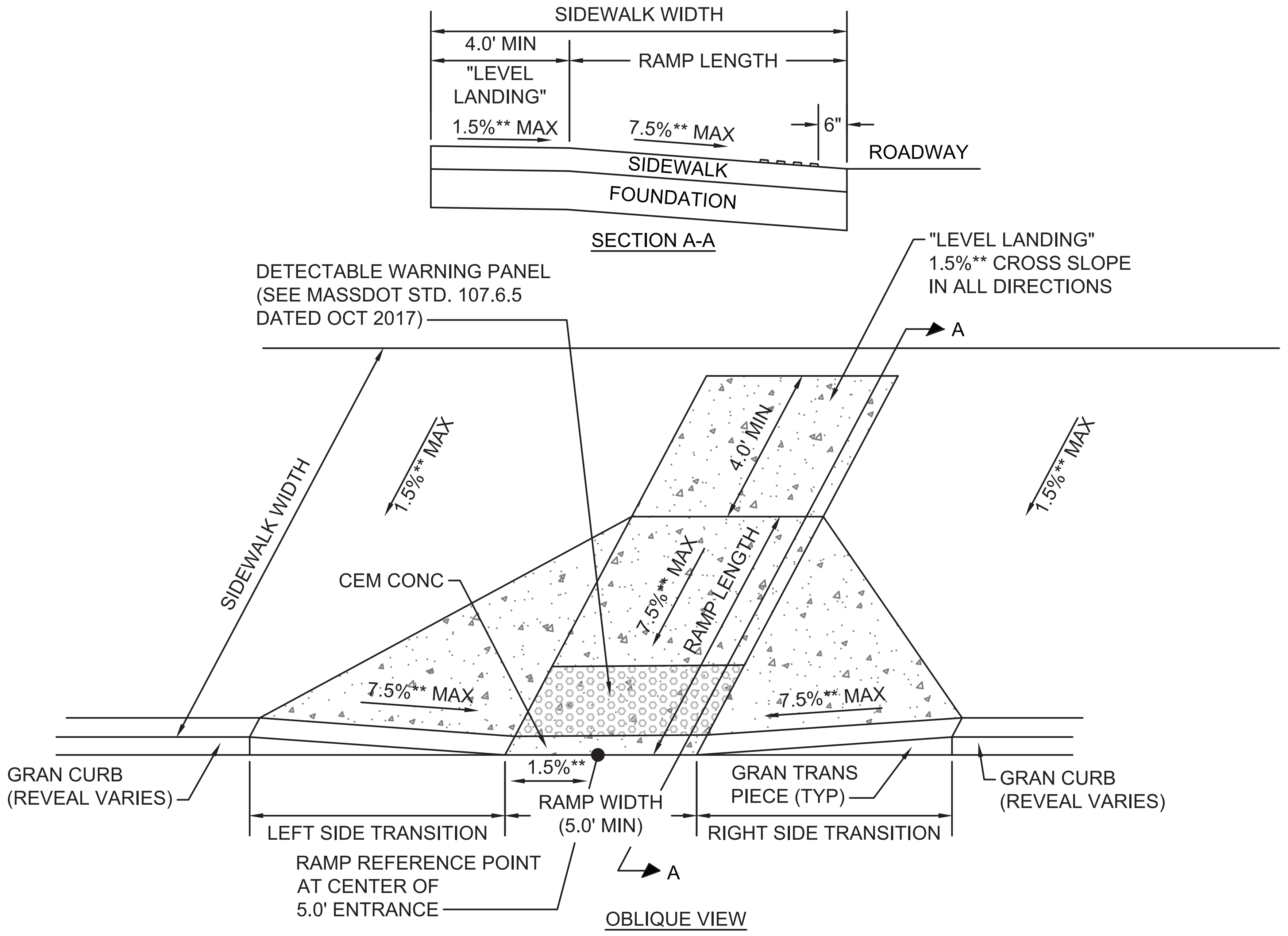
11554-WCR.DWG
Plotted on 13-Jul-2021 12:15 PM

WHEELCHAIR RAMP DETAIL - 12.50' OR GREATER - TABLE

NO.	LOCATION	RAMP WIDTH	RAMP LENGTH	LEFT SIDE		RIGHT SIDE		OPENING ELEVATION	NOTES
				ROADWAY GUTTER	TRANS	ROADWAY GUTTER	TRANS		
12	STA. 22+26.6, 42.6' LT ALGN - OBRIEN HWY	5'-0"	8'-6"	1.8%	9'-0"	-0.5%	3'-3"*	28.73	3" REVEAL RT TRANS
15	STA. 22+40.4, 42.8' RT ALGN - OBRIEN HWY	5'-0"	8'-0"	-3.0%	5'-4"*	2.2%	11'-0"	28.68	3" REVEAL LT TRANS
19	STA. 23+44.3, 42.5' RT ALGN - OBRIEN HWY	--	--	--	--	--	--	--	SEE SHEET 34.1
23	STA. 24+79.6, 43.6' RT ALGN - OBRIEN HWY	5'-0"	8'-6"	-0.8%	4'-4"*	2.2%	11'-0"*	22.45	4" REVEAL LT TRANS
28	STA. 33+92.3, 71.2' RT ALGN - OBRIEN HWY	5'-0"	8'-6"	-0.4%	6'-6"*	0.2%	7'-8"*	25.27	
35	STA. 606+44.0, 21.1' RT ALGN - CAMBRIDGE ST	5'-0"	3'-0"	1.6%	9'-0"*	-2.4%	3'-3"*	22.82	3" REVEAL LT/RT TRANS
36	STA. 607+99.4, 41.6' LT ALGN - CAMBRIDGE ST	5'-0"	8'-6"	0.7%	7'-8"*	0.7%	5'-3"	22.23	4" REVEAL RT TRANS
39	STA. 608+27.4, 59.8' RT ALGN - CAMBRIDGE ST	5'-0"	8'-9"	-0.5%	6'-6"	1.0%	7'-8"	21.14	4" REVEAL RT TRANS
41	STA. 102+70.9, 27.8' RT ALGN - FIRST ST	5'-0"	3'-0"	2.7%	5'-6"*	-3.3%	6'-6"*	22.20	3" REVEAL LT TRANS
44	STA. 104+57.2, 31.7' LT ALGN - FIRST ST	5'-0"	9'-6"	-2.8%	6'-6"*	2.8%	5'-6"	28.03	3" REVEAL RT TRANS
45	STA. 104+44.5, 32.0' RT ALGN - FIRST ST	--	--	--	--	--	--	--	SEE SHEET 34.1
46	STA. 105+70.4, 34.3' LT ALGN - FIRST ST	5'-0"	8'-6"	-0.5%	5'-9"*	1.5%	6'-6"*	28.51	3" REVEAL LT TRANS

WHEELCHAIR RAMP DETAIL - 6.50' TO 12.50' - TABLE

NO.	LOCATION	RAMP WIDTH	RAMP LENGTH	LEFT SIDE		RIGHT SIDE		OPENING ELEVATION	NOTES
				ROADWAY GUTTER	TRANS	ROADWAY GUTTER	TRANS		
11	STA. 19+56.9, 37.2' LT ALGN - OBRIEN HWY	5'-0"	4'-4"	0.3%	15'-0"	-0.3%	15'-0"	31.99	NO DETECTABLE WARNING PANEL
16	STA. 23+31.5, 51.9' LT ALGN - OBRIEN HWY	5'-0"	7'-0"	2.3%	5'-6"*	-1.6%	6'-6"	26.52	3" REVEAL LT TRANS
20	STA. 24+74.1, 53.8' LT ALGN - OBRIEN HWY	5'-0"	7'-0"	1.0%	7'-8"*	-0.6%	4'-0"*	22.81	3" REVEAL RT TRANS
32	STA. 605+46.6, 24.0' LT ALGN - CAMBRIDGE ST	5'-0"	4'-3"	0.5%	10'-6"	-0.5%	4'-4"*	24.38	3" REVEAL RT TRANS
33	STA. 605+51.0, 17.2' RT ALGN - CAMBRIDGE ST	--	--	--	--	--	--	--	SEE SHEET 34
34	STA. 606+42.8, 32.0' LT ALGN - CAMBRIDGE ST	5'-0"	6'-0"	1.6%	4'-6"	-1.2%	6'-6"	23.59	3" REVEAL LT TRANS
40	STA. 102+72.4, 22.5' LT ALGN - FIRST ST	--	--	--	--	--	--	--	SEE SHEET 34
42	STA. 103+48.3, 31.5' LT ALGN - FIRST ST	5'-0"	3'-0"	-2.6%	4'-4"	2.6%	11'-0"	24.56	3" REVEAL LT TRANS
43	STA. 103+54.1, 33.1' RT ALGN - FIRST ST	5'-0"	3'-0"	2.5%	11'-0"*	-1.6%	4'-4"*	24.05	3" REVEAL RT TRANS
47	STA. 105+68.7, 33.2' RT ALGN - FIRST ST	5'-0"	5'-6"	2.3%	11'-0"*	-2.3%	6'-6"*	27.14	3" REVEAL LT/RT TRANS
52	STA. 24+86.2, 69.2' LT ALGN - OBRIEN HWY	5'-0"	7'-0"	-0.6%	4'-0"*	0.6%	7'-8"*	23.03	3" REVEAL LT TRANS
92	STA. 25+89.2, 50.5' LT ALGN - OBRIEN HWY	5'-0"	5'-0"	0.9%	7'-9"	0.3%	7'-9"	21.08	

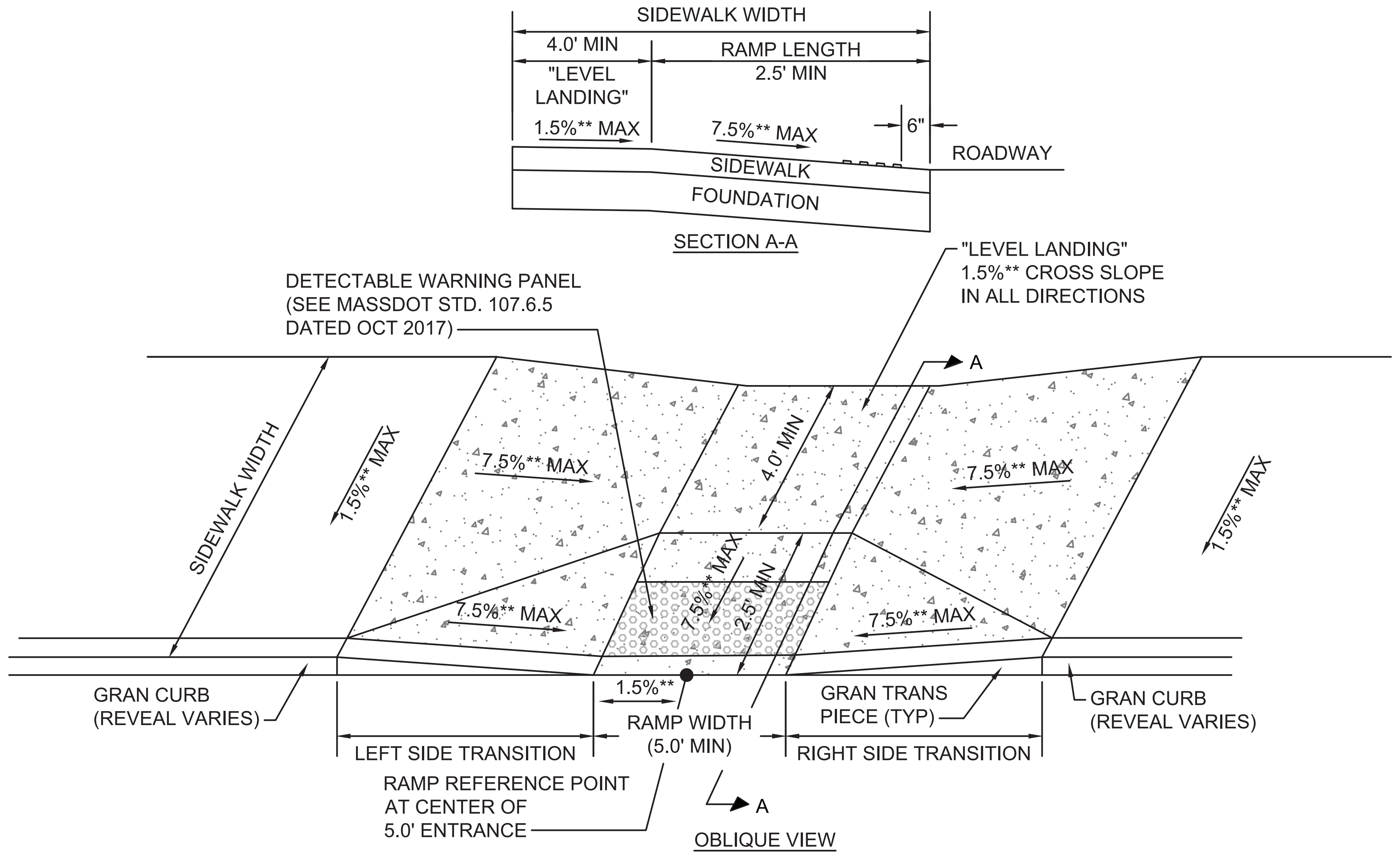


WHEELCHAIR RAMP - 12.50' OR GREATER

SCALE: N.T.S.

LEGEND

▨	= LIMITS OF CEM CONC RAMP
▩	= DETECTABLE WARNING PANEL



WHEELCHAIR RAMP - 6.50' TO 12.50'

SCALE: N.T.S.

REVISIONS		
NO.	REVISION DESCRIPTION	DATE
3	DWY 109 MODIFICATION	5/27/2020

NOTES:
*TRANSITION IS CURVED, SEE PLANS FOR ADDITIONAL INFORMATION.
**TOLERANCE FOR CONSTRUCTION ±0.5%
NEGATIVE (-) ROADWAY GUTTER SLOPE DENOTES A LOW SIDE TRANSITION.

CAMBRIDGE
O'BRIEN HIGHWAY
WCR DWY & SBL DETAILS
SHEET 95 OF 120

11554-WCR.DWG Plotted on 13-Jul-2021 12:15 PM

WHEELCHAIR RAMP DETAIL - RAISED CROSSWALK

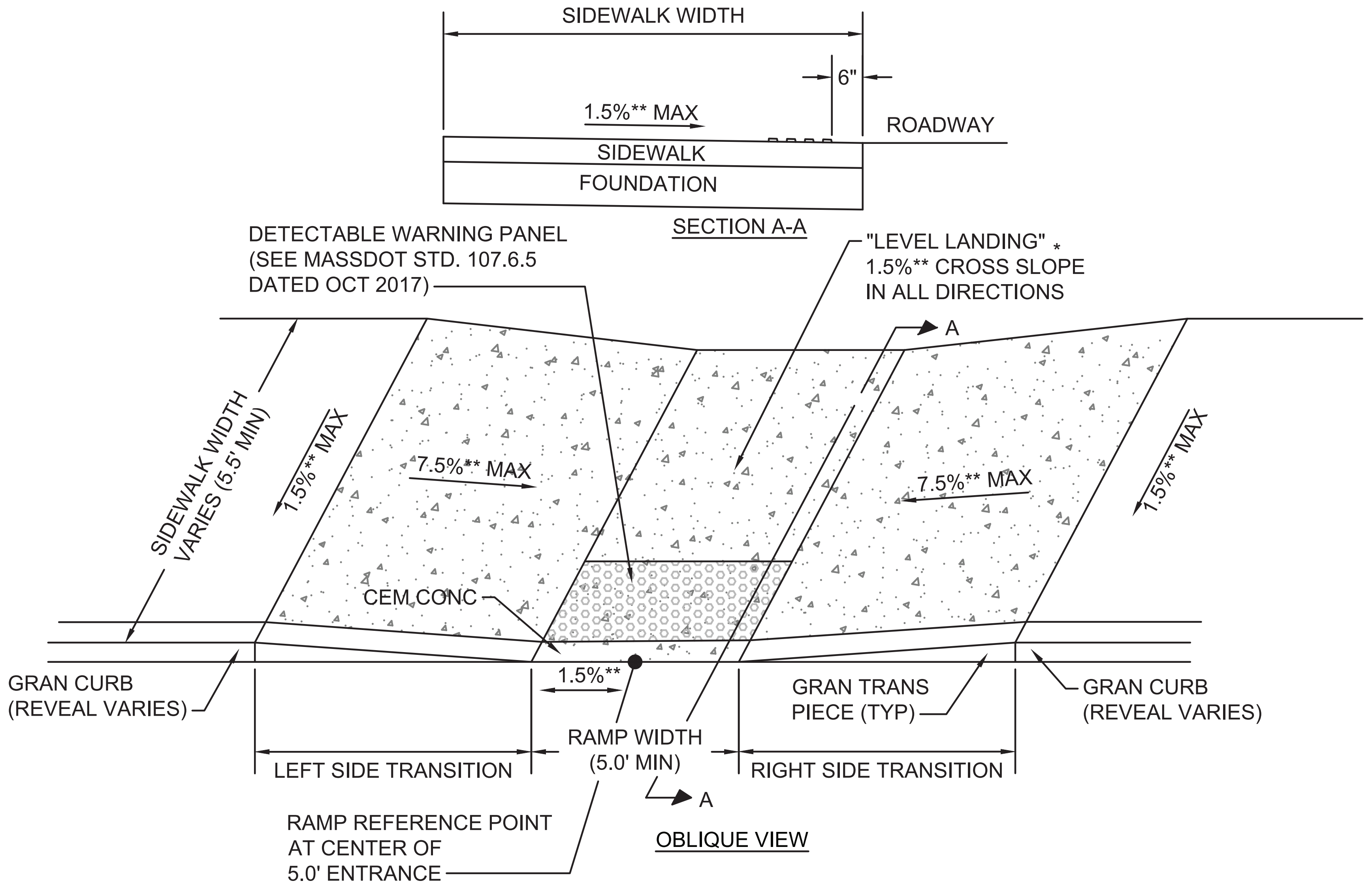
NO.	LOCATION	LANDING WIDTH	LANDING LENGTH	OPENING ELEVATION	NOTES
24	STA. 30+21.3, 63.5' RT ALGN - OBRIEN HWY	8'-0"	4'-0"	21.28	
25	STA. 30+87.5, 62.0' RT ALGN - OBRIEN HWY	8'-0"	4'-0"	21.68	
26	STA. 31+30.0, 57.0' LT ALGN - OBRIEN HWY	10'-0"	4'-0"	22.86	
27	STA. 31+69.2, 57.0' LT ALGN - OBRIEN HWY	10'-0"	4'-0"	22.93	

WHEELCHAIR RAMP DETAIL - CUT THROUGH - TABLE

NO.	LOCATION	OPENING WIDTH	ROADWAY GUTTER	OPENING ELEVATION	NOTES
13	STA. 22+32.1, 10.0' LT ALGN - OBRIEN HWY	15'-0"	2.6%	29.52	
14	STA. 22+33.7, 0.0' RT ALGN - OBRIEN HWY	15'-0"	2.0%	29.68	
17	STA. 23+37.4, 10.0' LT ALGN - OBRIEN HWY	12'-0"	2.1%	26.90	
18	STA. 23+39.0, 0.0' RT ALGN - OBRIEN HWY	12'-0"	2.8%	26.98	
21	STA. 24+77.5, 11.6' LT ALGN - OBRIEN HWY	12'-0"	2.2%	23.41	
22	STA. 24+78.4, 0.0' RT ALGN - OBRIEN HWY	12'-0"	1.9%	23.28	
37	STA. 608+26.3, 0.4' LT ALGN - CAMBRIDGE ST	8'-0"	0.7%	21.79	
38	STA. 608+40.2, 46.3' RT ALGN - CAMBRIDGE ST	8'-0"	0.6%	21.24	
93	STA. 25+89.2, 8.0' LT ALGN - OBRIEN HWY	8'-0"	0.2%	21.87	
94	STA. 25+89.2, 1.0' RT ALGN - OBRIEN HWY	8'-0"	0.2%	21.99	
95	STA. 25+89.2, 39.5' RT ALGN - OBRIEN HWY	8'-0"	0.2%	21.22	
96	STA. 30+44.3, 61.7' RT ALGN - OBRIEN HWY	6'-0"	1.0%	21.38	
97	STA. 30+64.1, 61.7' RT ALGN - OBRIEN HWY	6'-0"	1.0%	21.52	

WHEELCHAIR RAMP DETAIL - LESS THAN 6.5' - TABLE

NO.	LOCATION	RAMP OPENING	WALK WIDTH	LEFT SIDE		RIGHT SIDE		OPENING ELEVATION	NOTES
				ROADWAY GUTTER	TRANS	ROADWAY GUTTER	TRANS		
53	STA. 25+20.6, 70.2' LT ALGN - OBRIEN HWY	5'-0"	8'-6"	3.0%	14'-0"	-2.1%	12'-0"*	22.45	


SIDEWALK WIDTH
6"
1.5%** MAX
ROADWAY
SIDEWALK
FOUNDATION
SECTION A-A
DETECTABLE WARNING PANEL (SEE MASSDOT STD. 107.6.5 DATED OCT 2017)
"LEVEL LANDING" * 1.5%** CROSS SLOPE IN ALL DIRECTIONS
A
SIDEWALK WIDTH VARIES (5.5' MIN)
1.5%** MAX
7.5%** MAX
7.5%** MAX
1.5%** MAX
CEM CONC
GRAN CURB (REVEAL VARIES)
1.5%**
GRAN TRANS PIECE (TYP)
GRAN CURB (REVEAL VARIES)
LEFT SIDE TRANSITION
RAMP WIDTH (5.0' MIN)
RIGHT SIDE TRANSITION
A
RAMP REFERENCE POINT AT CENTER OF 5.0' ENTRANCE
OBLIQUE VIEW

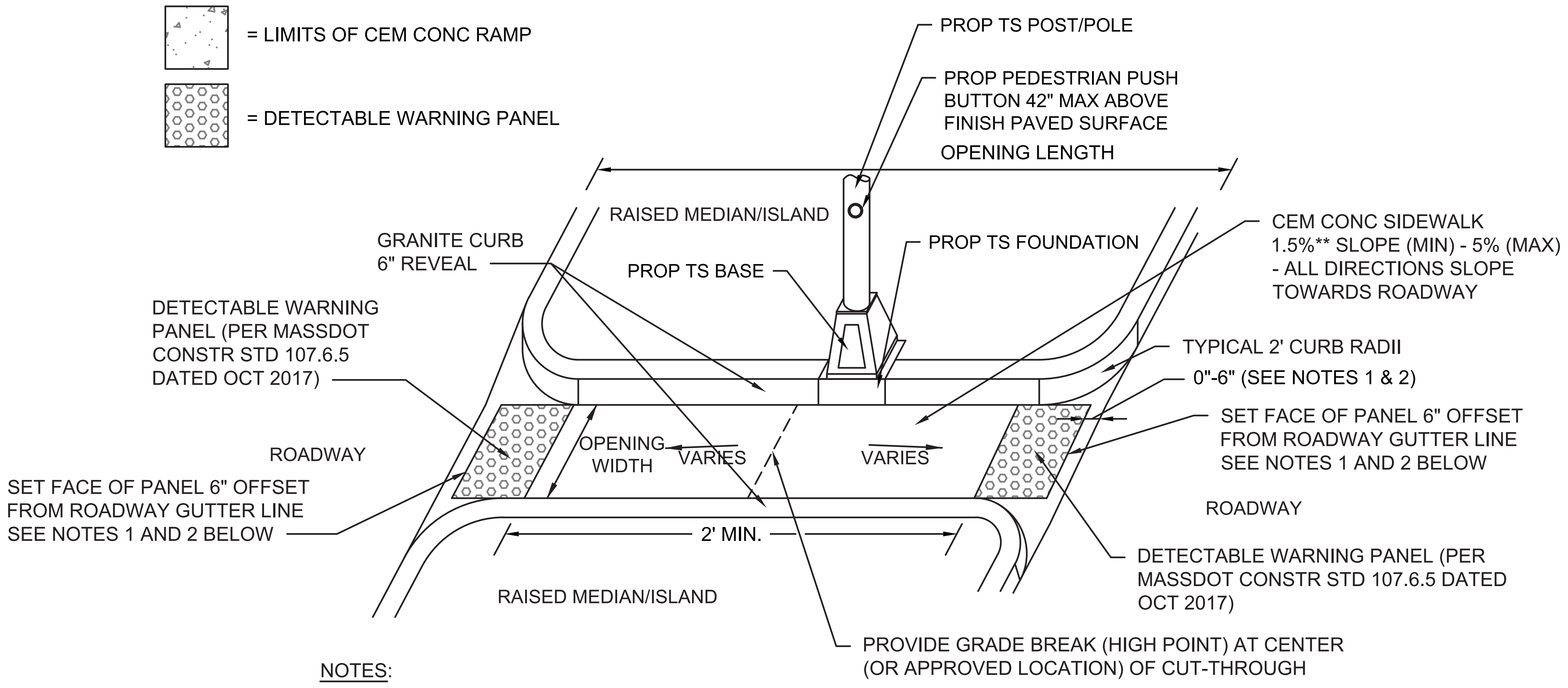
WHEELCHAIR RAMP - <6.50' WIDTH

SCALE: N.T.S.

LEGEND

▨ = LIMITS OF CEM CONC RAMP

▨ = DETECTABLE WARNING PANEL


PROP TS POST/POLE
PROP PEDESTRIAN PUSH BUTTON 42" MAX ABOVE FINISH PAVED SURFACE
OPENING LENGTH
RAISED MEDIAN/ISLAND
GRANITE CURB 6" REVEAL
PROP TS BASE
PROP TS FOUNDATION
CEM CONC SIDEWALK 1.5%** SLOPE (MIN) - 5% (MAX) - ALL DIRECTIONS SLOPE TOWARDS ROADWAY
DETECTABLE WARNING PANEL (PER MASSDOT CONSTR STD 107.6.5 DATED OCT 2017)
TYPICAL 2' CURB RADII
0"-6" (SEE NOTES 1 & 2)
ROADWAY
OPENING WIDTH
VARIES
VARIES
SET FACE OF PANEL 6" OFFSET FROM ROADWAY GUTTER LINE SEE NOTES 1 AND 2 BELOW
SET FACE OF PANEL 6" OFFSET FROM ROADWAY GUTTER LINE SEE NOTES 1 AND 2 BELOW
ROADWAY
2' MIN.
RAISED MEDIAN/ISLAND
DETECTABLE WARNING PANEL (PER MASSDOT CONSTR STD 107.6.5 DATED OCT 2017)
PROVIDE GRADE BREAK (HIGH POINT) AT CENTER (OR APPROVED LOCATION) OF CUT-THROUGH

NOTES:

1. DETECTABLE WARNING PANELS TO BE PLACED WHEN MEDIAN OPENING IS 6' OR GREATER IN LENGTH.
2. WHEN MEDIAN OPENING LENGTH IS 7' OR GREATER, THE DETECTABLE WARNING PANELS SHALL BE OFFSET FROM THE ROADWAY GUTTER LINE BY 6" FOR MAINTENANCE PURPOSES. FOR MEDIAN OPENING LENGTHS BETWEEN 6' AND 7', THE DETECTABLE WARNING PANEL SHALL BE SET AT THE ROADWAY GUTTER LINE.

MEDIAN CUT-THROUGH

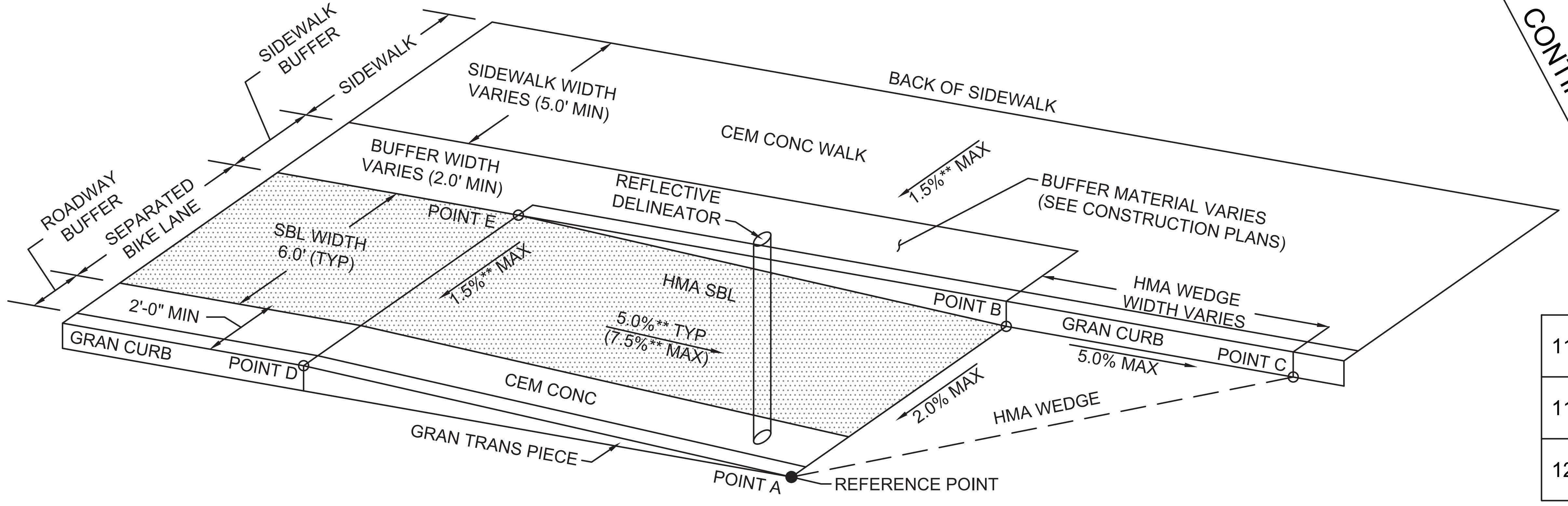
SCALE: N.T.S.

CAMBRIDGE
O'BRIEN HIGHWAY
WCR DWY & SBL DETAILS
SHEET 96 OF 120

NOTES:
*TRANSITION IS CURVED, SEE PLANS FOR ADDITIONAL INFORMATION.
**TOLERANCE FOR CONSTRUCTION ±0.5%
NEGATIVE (-) ROADWAY GUTTER SLOPE DENOTES A LOW SIDE TRANSITION.

SEPARATED BIKE LANE TRANSITION

NO.	LOCATION	RAMP WIDTH	ROADWAY GUTTER	RAMP & TRANS LENGTH	ELEVATION						NOTES
					POINT A (REFERENCE POINT)	POINT B	POINT C	POINT D (BOTTOM OF CURB)	POINT D (TOP OF CURB)	POINT E	
65	STA. 17+83.0, 36.5' LT ALGN - OBRIEN HWY	8'-0"	0.7%	14'-0"	31.88	31.96	31.32	31.97	32.47	32.59	
68	STA. 22+02.9, 34.0' LT ALGN - OBRIEN HWY	8'-0"	2.8%	6'-6"	--	--	--	--	--	--	SEE SHEET 34
69	STA. 22+10.8, 34.5' RT ALGN - OBRIEN HWY	8'-0"	1.4%	15'-0"	29.45	29.53	29.13	29.67	30.17	30.29	
70	STA. 23+55.6, 44.5' LT ALGN - OBRIEN HWY	8'-0"	-2.3%	6'-6"	26.10	26.26	26.20	25.87	26.37	26.49	
71	STA. 23+58.8, 34.5' RT ALGN - OBRIEN HWY	8'-0"	-3.0%	6'-6"	--	--	--	--	--	--	SEE SHEET 34
72	STA. 24+52.4, 44.5' LT ALGN - OBRIEN HWY	8'-0"	3.9%	15'-0"	23.52	23.60	22.93	23.96	24.29	24.37	
73	STA. 24+54.8, 34.5' RT ALGN - OBRIEN HWY	8'-0"	2.6%	15'-0"	23.09	23.17	22.77	23.50	24.00	24.12	
74	STA. 26+09.5, 42.5' LT ALGN - OBRIEN HWY	8'-0"	-0.4%	11'-0"	21.24	21.26	21.19	21.28	21.78	21.90	
80	STA. 33+71.3, 55.0' RT ALGN - OBRIEN HWY	8'-0"	-0.9%	9'-0"	25.26	25.42	25.42	25.19	25.69	25.81	
81	STA. 33+63.7, 38.0' LT ALGN - OBRIEN HWY	8'-0"	-1.9%	6'-6"	25.64	25.80	25.68	25.45	25.95	26.07	
82	STA. 601+76.8, 14.0' LT ALGN - CAMBRIDGE ST	9'-0"	-2.9%	15'-0"	30.83	30.95	31.12	30.40	30.73	30.85	4" CURB REVEAL
83	STA. 605+32.6, 16.0' LT ALGN - CAMBRIDGE ST	8'-0"	0.9%	15'-0"	24.55	24.67	24.43	24.70	25.20	25.32	
84	STA. 105+92.3, 23.4' LT ALGN - FIRST ST	~~8'-0"~~	~~1.0%~~	~~14'-0"~~	~~28.36~~	~~28.52~~	~~28.40~~	~~28.49~~	~~28.99~~	~~29.11~~	BY OTHERS
85	STA. 105+92.3, 19.5' RT ALGN - FIRST ST	~~8'-0"~~	~~2.3%~~	~~14'-0"~~	~~27.72~~	~~27.60~~	~~27.50~~	~~27.83~~	~~28.08~~	~~28.04~~	BY OTHERS
89	STA. 103+73.7, 23.5' LT ALGN - FIRST ST	8'-0"	3.1%	15'-0"	25.24	25.40	25.09	25.70	26.20	26.32	
90	STA. 104+48.5, 23.5' LT ALGN - FIRST ST	8'-0"	-2.8%	6'-6"	27.53	27.69	27.92	27.35	27.85	27.97	
97	STA. 104+31.5, 24.0' RT ALGN - FIRST ST	8'-0"	-2.8%	6'-6"	--	--	--	--	--	--	SEE SHEET 34
98	STA. 103+73.7, 24.0' RT ALGN - FIRST ST	8'-0"	3.1%	15'-0"	24.51	24.60	24.15	24.91	25.41	25.53	
99	STA. 605+69.6, 24.1' RT ALGN - CAMBRIDGE ST	--	--	--	--	--	--	--	--	--	SEE SHEET 34.1
100	STA. 601+80.0, 17.0' RT ALGN - CAMBRIDGE ST	8'-0"	-3.1%	15'-0"	30.62	30.74	30.84	30.16	30.49	30.61	4" CURB REVEAL
116	STA. 606+58.3, 24.0' LT ALGN - CAMBRIDGE ST	8'-0"	1.2%	15'-0"	23.37	23.49	23.48	23.19	23.69	23.81	
117	STA. 606+63.6, 12.0' RT ALGN - CAMBRIDGE ST	8'-0"	1.0%	10'-0"	23.15	23.27	23.14	23.07	23.32	23.20	3" CURB REVEAL

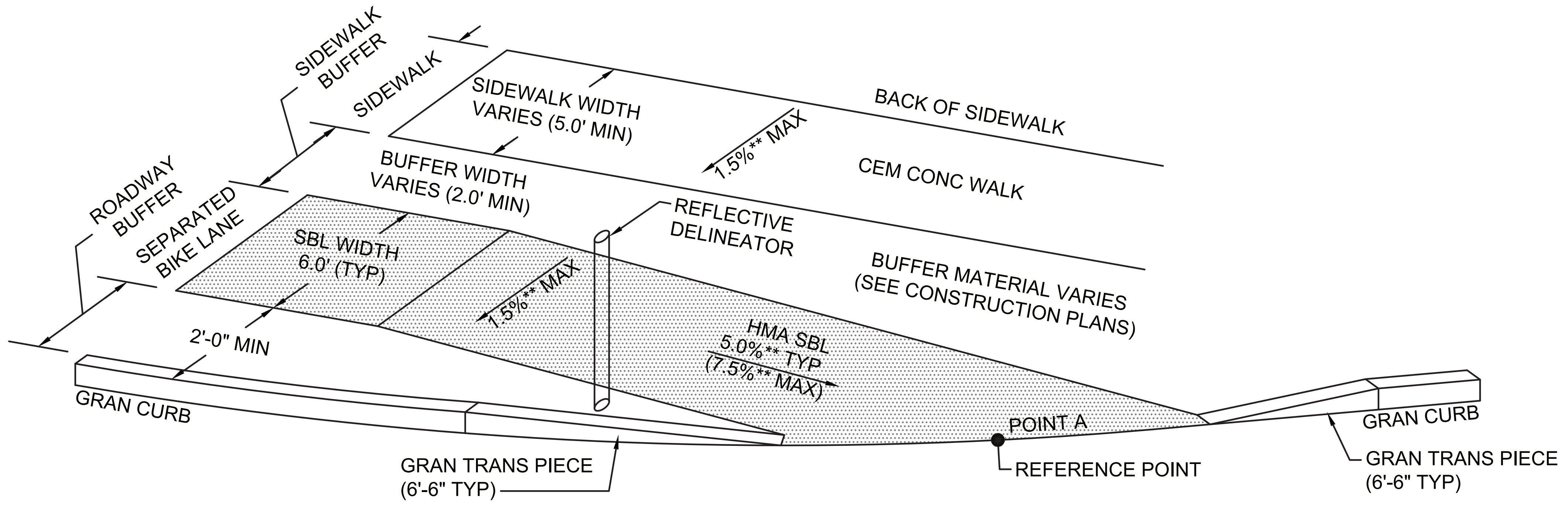


SEPARATED BIKE LANE TRANSITION

SCALE: N.T.S.

SEPARATED BIKE LANE TRANSITION - ON RADIUS

NO.	LOCATION	RAMP WIDTH	ROADWAY GUTTER	RAMP LENGTH	ELEVATION		NOTES
					POINT A (REFERENCE POINT)	POINT B	
76	STA. 30+12.6, 49.5' RT ALGN - OBRIEN HWY	6'-0"	--	10'-0"	21.10	21.63	
77	STA. 30+96.1, 49.5' RT ALGN - OBRIEN HWY	6'-0"	--	10'-0"	21.61	22.14	
78	STA. 31+24.9, 47.0' LT ALGN - OBRIEN HWY	6'-0"	--	--	22.69	--	RAISED CROSSING
79	STA. 31+74.3, 47.0' LT ALGN - OBRIEN HWY	6'-0"	--	--	22.76	--	RAISED CROSSING


SIDEWALK BUFFER
SIDEWALK
SIDEWALK WIDTH VARIES (5.0' MIN)
BACK OF SIDEWALK
1.5%** MAX
CEM CONC WALK
BUFFER WIDTH VARIES (2.0' MIN)
ROADWAY BUFFER
SEPARATED BIKE LANE
REFLECTIVE DELINEATOR
SBL WIDTH 6.0' (TYP)
BUFFER MATERIAL VARIES (SEE CONSTRUCTION PLANS)
1.5%** MAX
HMA SBL 5.0%** TYP (7.5%** MAX)
2'-0" MIN
GRAN CURB
POINT A
GRAN CURB
REFERENCE POINT
GRAN TRANS PIECE (6'-6" TYP)
GRAN TRANS PIECE (6'-6" TYP)

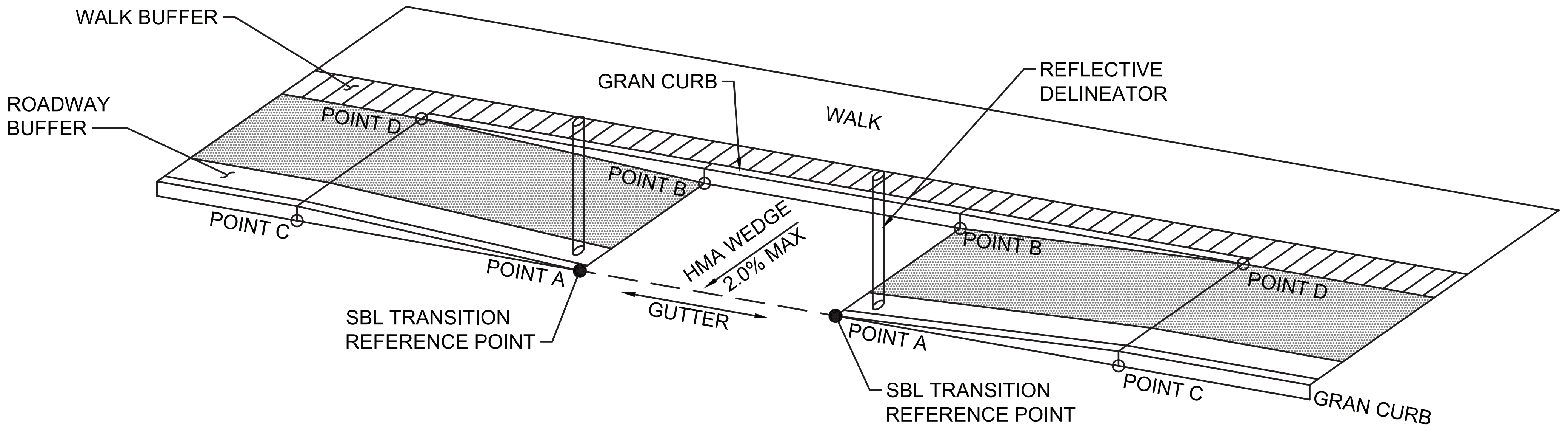
SEPARATED BIKE LANE TRANSITION - ON RADIUS

SCALE: N.T.S.

SEPARATED BIKE LANE TRANSITION - PROTECTED

NO.	LOCATION	RAMP WIDTH	ROADWAY GUTTER	RAMP & TRANS LENGTH	ELEVATION						NOTES
					POINT A (REFERENCE POINT)	POINT B (BOTTOM OF CURB)	POINT B (TOP OF CURB)	POINT C (BOTTOM OF CURB)	POINT C (TOP OF CURB)	POINT D	
75	STA. 26+76.4, 43.3' RT ALGN - OBRIEN HWY	8'-0"	4.6%	15'-0"	21.35	21.47	21.97	22.11	22.61	22.73	
121	STA. 26+58.6, 46.6' RT ALGN - OBRIEN HWY	8'-0"	-0.9%	15'-0"	21.22	21.34	21.84	21.11	21.61	21.73	
118	STA. 607+49.5, 24.0' LT ALGN - CAMBRIDGE ST	8'-0"	1.1000	15'-0"	22.29	22.41	22.18	22.47	22.97	23.09	
119	STA. 25+80.7, 73.6' RT ALGN - OBRIEN HWY	8'-0"	0.8%	15'-0"	21.08	21.20	--	21.20	21.53	21.65	POINT C IS THE REFERENCE POINT OF WCR 39
120	STA. 25+98.1, 65.6' RT ALGN - OBRIEN HWY	8'-0"	-0.2%	15'-0"	21.00	21.12	--	20.98	21.48	21.60	POINT C IS THE REFERENCE POINT OF WCR 39

CONTINUED



SEPARATED BIKE LANE TRANSITION - PROTECTED

SCALE: N.T.S.

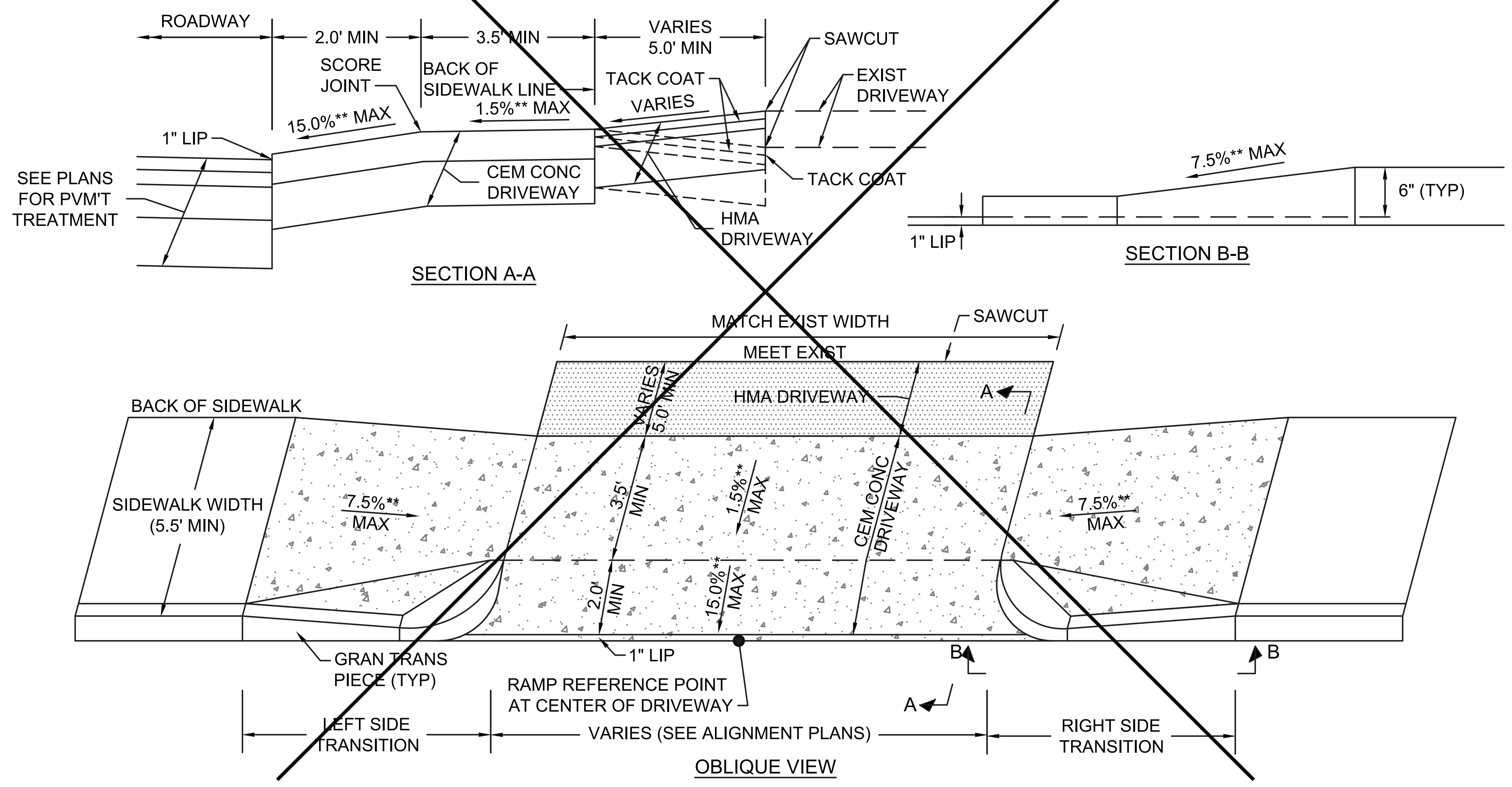
11554-WCR.DWG Plotted on 13-Jul-2021 12:15 PM

NOTES:
*TRANSITION IS CURVED, SEE PLANS FOR ADDITIONAL INFORMATION.
**TOLERANCE FOR CONSTRUCTION ±0.5%
NEGATIVE (-) ROADWAY GUTTER SLOPE DENOTES A LOW SIDE TRANSITION.

CAMBRIDGE
O'BRIEN HIGHWAY
WCR DWY & SBL DETAILS
SHEET 97 OF 120

DRIVEWAYS THROUGH SIDEWALK - WITH 2' CURB CORNERS

NO.	LOCATION	RAMP WIDTH	RAMP LENGTH	LEFT SIDE		RIGHT SIDE		OPENING ELEVATION	TOP OF RAMP ELEVATION	BACK OF DRIVEWAY ELEVATION	NOTES
				ROADWAY GUTTER	TRANS	ROADWAY GUTTER	TRANS				



SECTION A-A

SECTION B-B

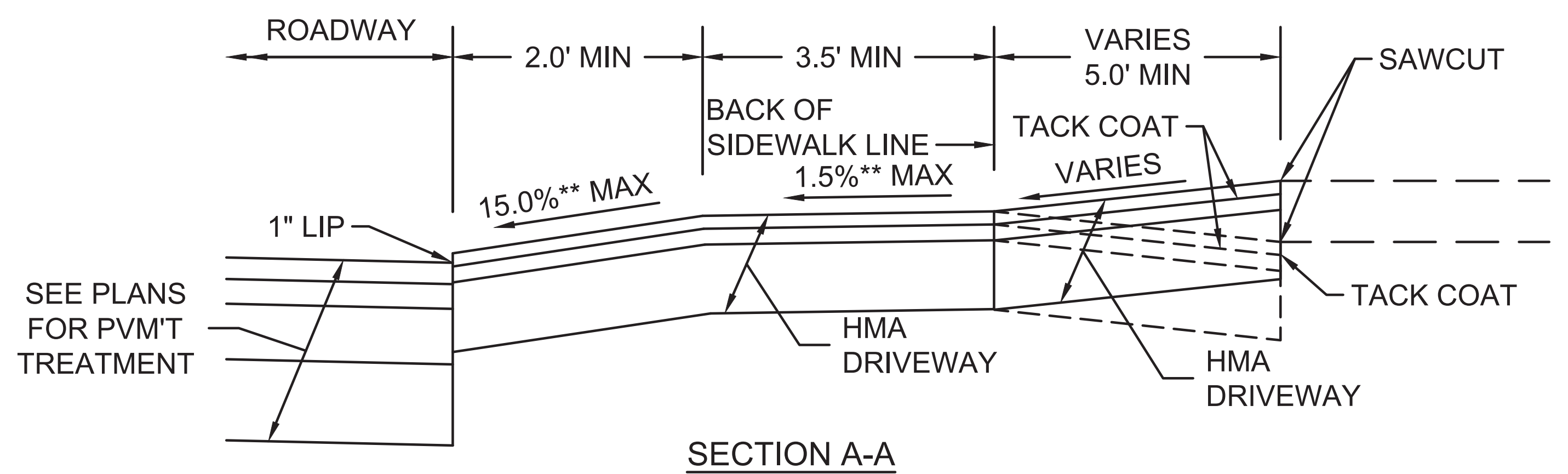
OBLIQUE VIEW

DRIVEWAYS THROUGH SIDEWALK - WITH 2' CURB CORNERS

SCALE: N.T.S.

LEGEND

▨	LIMITS OF HMA
▨	LIMITS OF CEM CONC



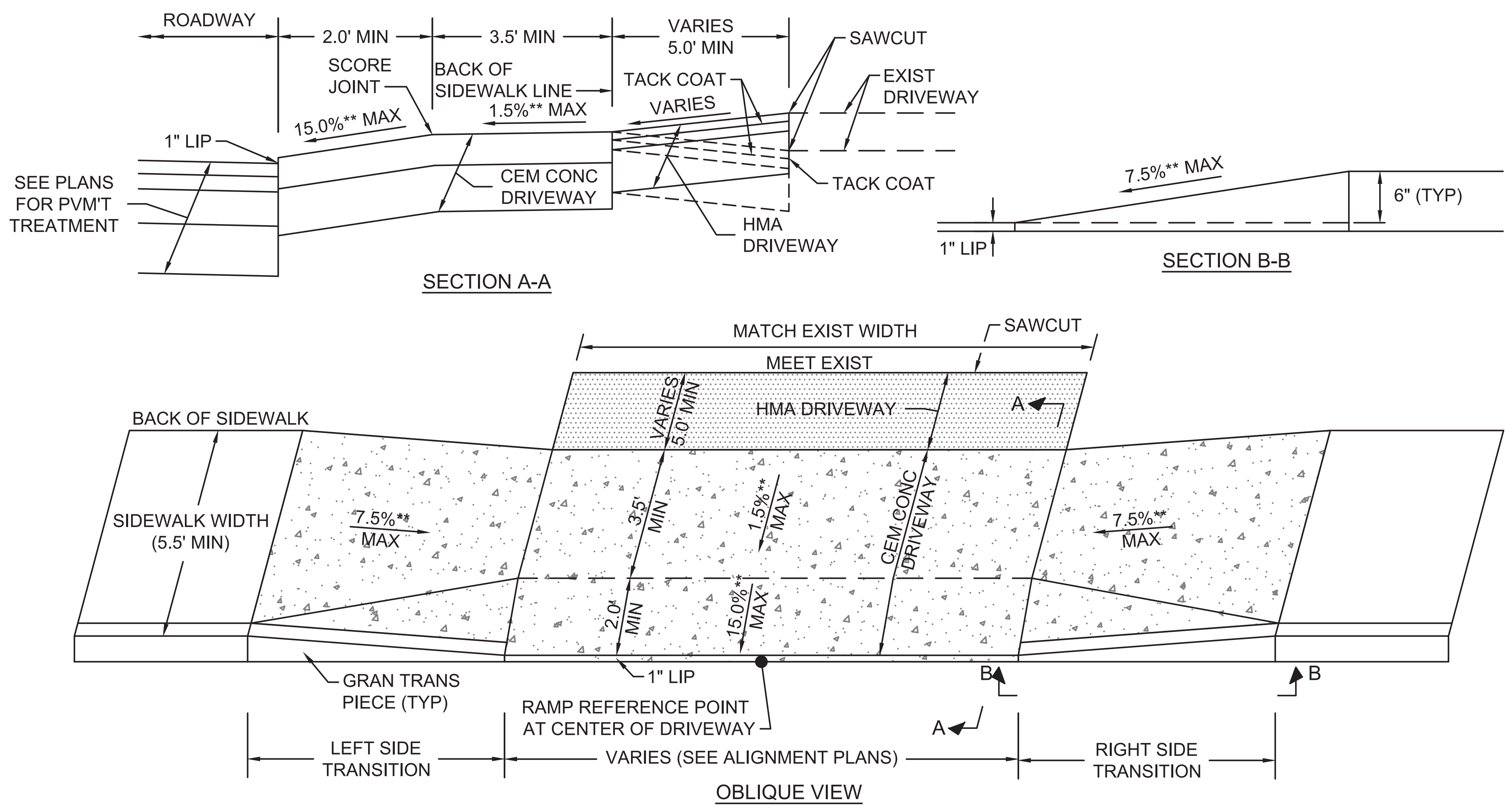
SECTION A-A

HMA DRIVEWAY

SCALE: N.T.S.

DRIVEWAYS THROUGH SIDEWALK

NO.	LOCATION	RAMP WIDTH	RAMP LENGTH	LEFT SIDE		RIGHT SIDE		OPENING ELEVATION	TOP OF RAMP ELEVATION	BACK OF DRIVEWAY ELEVATION	NOTES
				ROADWAY GUTTER	TRANS	ROADWAY GUTTER	TRANS				
109	STA. 30+54.4, 44.5' RT ALGN - OBRIEN HWY	--	--	--	--	--	--	--	--	--	HMA DRIVEWAY SEE SHEET ##
110	STA. 31+49.5, 38.0' LT ALGN - OBRIEN HWY	--	--	--	--	--	--	--	--	--	HMA DRIVEWAY SEE SHEET ##



SECTION A-A

SECTION B-B

OBLIQUE VIEW

DRIVEWAYS THROUGH SIDEWALK

SCALE: N.T.S.

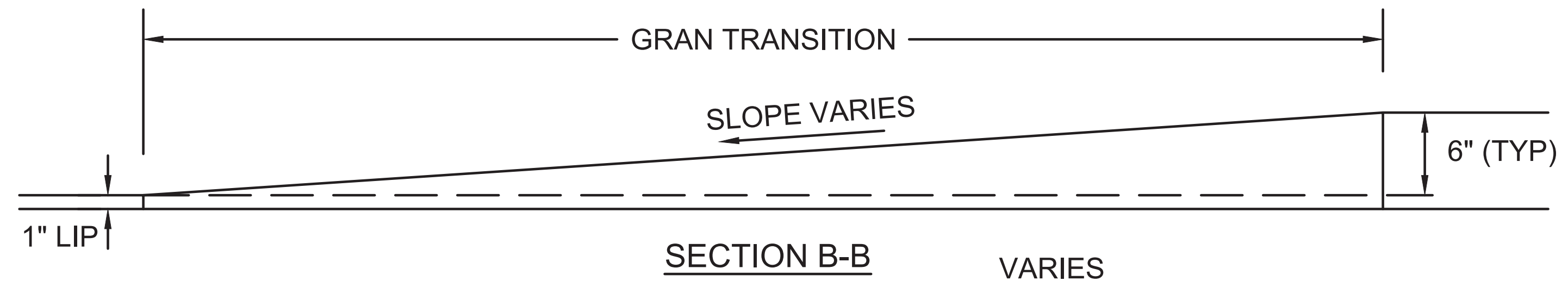
NOTES:
*TRANSITION IS CURVED, SEE PLANS FOR ADDITIONAL INFORMATION.
**TOLERANCE FOR CONSTRUCTION ±0.5%
NEGATIVE (-) ROADWAY GUTTER SLOPE DENOTES A LOW SIDE TRANSITION.

SBL DRIVEWAY RAMP DETAIL - 5.0% MAX

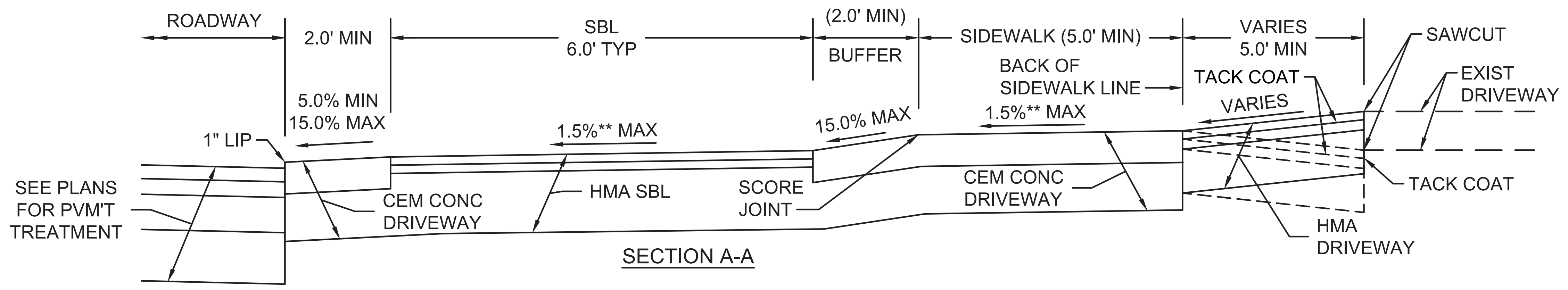
NO.	LOCATION	RAMP WIDTH	RAMP LENGTH	RAMP SLOPE	LEFT SIDE TRANSITION LENTH	RIGHT SIDE TRANSITION LENTH	OPENING ELEVATION	TOP OF RAMP ELEVATION	BACK OF SBL ELEVATION	BACK OF BUFFER ELEVATION	BACK OF DRIVEWAY ELEVATION	NOTES
106	STA. 21+78.3, 34.0' LT ALGN - OBRIEN HWY	23'-8"	2'-0"	--	15'-0"	6'-6"	--	--	--	--	--	SEE SHEET 34
107	STA. 27+91.1, 35.8' RT ALGN - OBRIEN HWY	30'-8"	2'-0"	4.5%	15'-0"	15'-0"	21.45	21.53	21.62	21.92	22.04	
108	STA. 28+61.7, 34.5' RT ALGN - OBRIEN HWY	22'-6"	2'-0"	4.0%	15'-0"	15'-0"	20.95	21.04	21.13	21.25	21.37	
111	STA. 602+51.5, 17.0' RT ALGN - CAMBRIDGE ST	24'-4"	2'-0"	12.5%	15'-0"	15'-0"	28.43	28.68	28.77	28.82	29.00	
112	STA. 602+60.9, 15.0' LT ALGN - CAMBRIDGE ST	33'-0"	3'-0"	14.5%	15'-0"	15'-0"	28.46	28.90	28.97	29.02	29.19	
113	STA. 607+03.2, 12.0' RT ALGN - CAMBRIDGE ST	31'-1"	2'-0"	14.5%	15'-0"	15'-0"	22.83	23.11	23.02	22.74	22.9±	

LEGEND

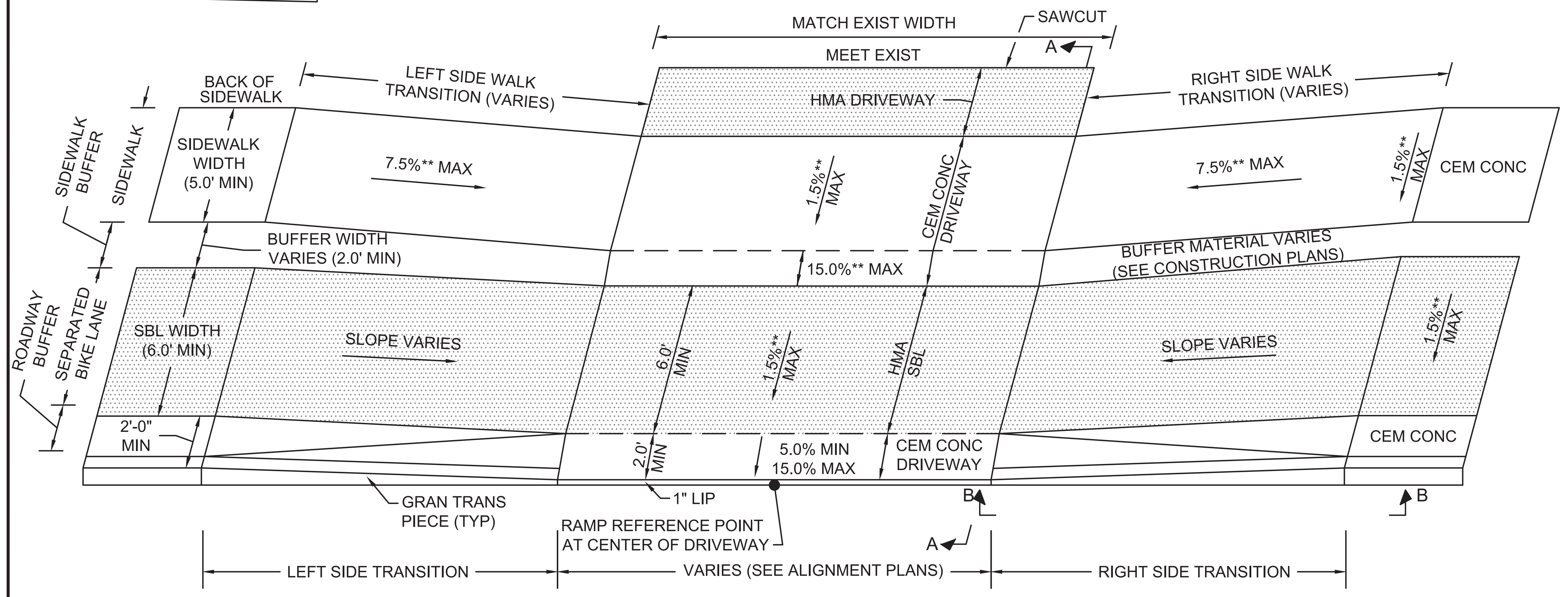
▨	LIMITS OF HMA
▨	LIMITS OF CEM CONC



SECTION B-B



SECTION A-A



OBLIQUE VIEW

* TOLERANCE FOR CONSTRUCTION ±0.5%

SEPARATED BIKE LANE DRIVEWAY

SCALE: N.T.S.

CAMBRIDGE
O'BRIEN HIGHWAY
LIGHTING PLANS
SHEET 99 OF 120

POLE/HANDHOLE SCHEDULE

EX- ○	EXISTING POLE & FIXTURE/S
✳	NEW LOCATION OF EXISTING POST TOP ACORN
	NEW TYPE 'F' TWIN POLE & FIXTURES
	NEW LOCATION OF EXISTING TYPE 'A' POLE & FIXTURE
⊞	NEW HANDHOLE

POLE/HANDHOLE LEGEND

① RELOCATE & REUSE EXISTING POLE IN NEW LOCATION SHOWN. REMOVE WIRE BACK TO HANDHOLE & MAKE SAFE.

② LOCATION OF NEW HANDHOLE (SEE STD MASS DOT DETAIL)

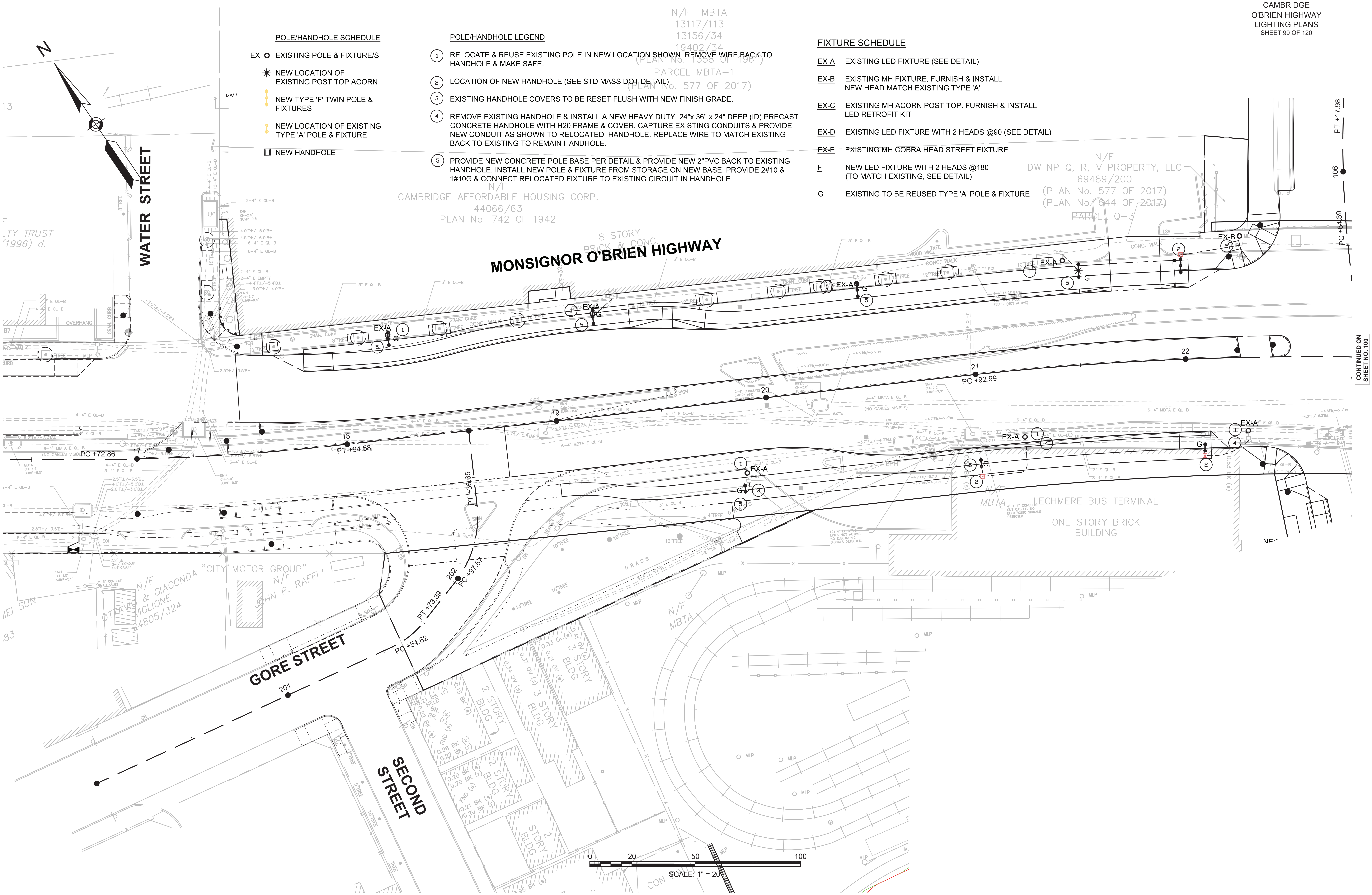
③ EXISTING HANDHOLE COVERS TO BE RESET FLUSH WITH NEW FINISH GRADE.

④ REMOVE EXISTING HANDHOLE & INSTALL A NEW HEAVY DUTY 24"x 36" x 24" DEEP (ID) PRECAST CONCRETE HANDHOLE WITH H20 FRAME & COVER. CAPTURE EXISTING CONDUITS & PROVIDE NEW CONDUIT AS SHOWN TO RELOCATED HANDHOLE. REPLACE WIRE TO MATCH EXISTING BACK TO EXISTING TO REMAIN HANDHOLE.

⑤ PROVIDE NEW CONCRETE POLE BASE PER DETAIL & PROVIDE NEW 2"PVC BACK TO EXISTING HANDHOLE. INSTALL NEW POLE & FIXTURE FROM STORAGE ON NEW BASE. PROVIDE 2#10 & 1#10G & CONNECT RELOCATED FIXTURE TO EXISTING CIRCUIT IN HANDHOLE.

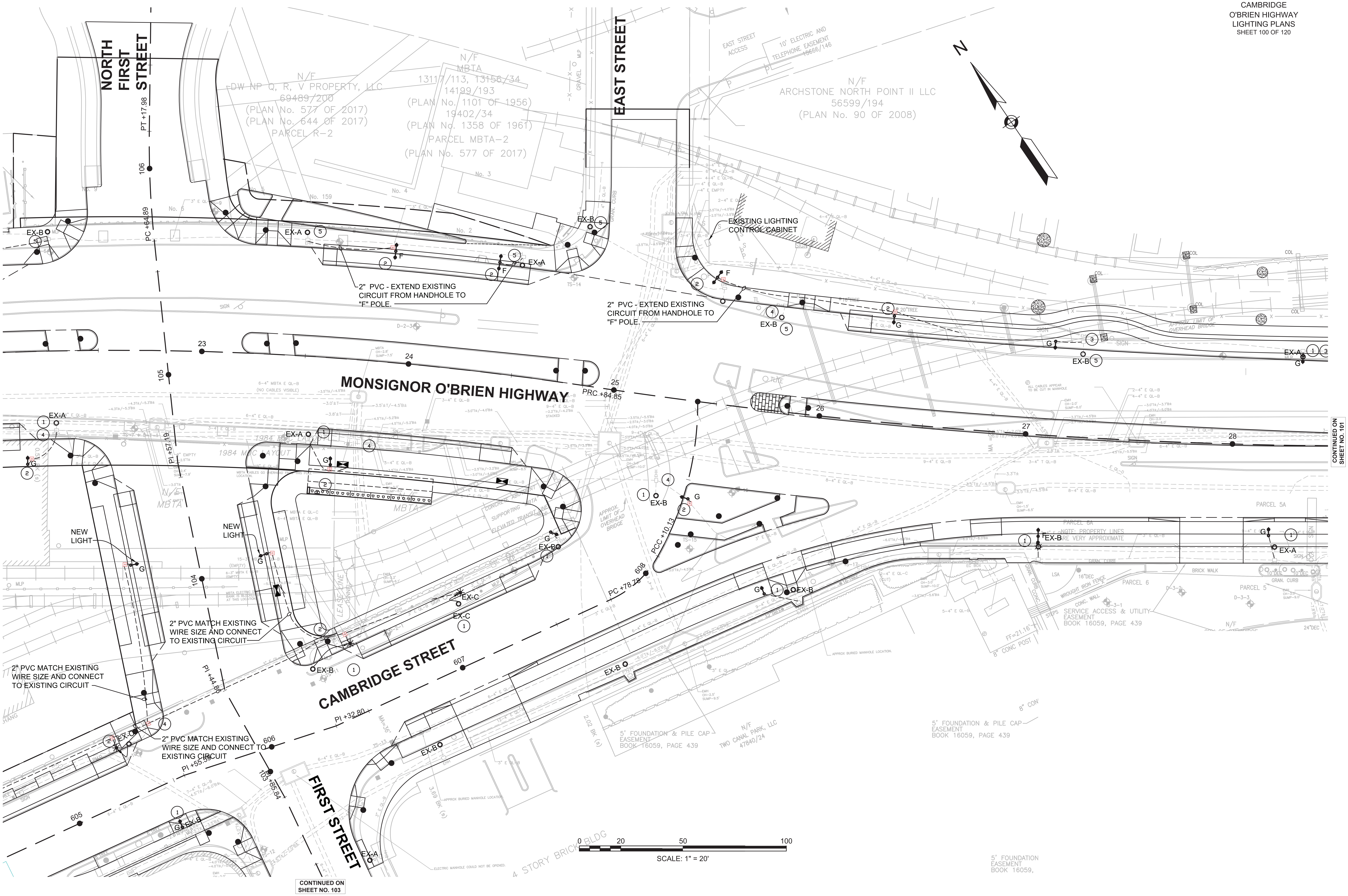
FIXTURE SCHEDULE

EX-A	EXISTING LED FIXTURE (SEE DETAIL)
EX-B	EXISTING MH FIXTURE. FURNISH & INSTALL NEW HEAD MATCH EXISTING TYPE 'A'
EX-C	EXISTING MH ACORN POST TOP. FURNISH & INSTALL LED RETROFIT KIT
EX-D	EXISTING LED FIXTURE WITH 2 HEADS @90 (SEE DETAIL)
EX-E	EXISTING MH COBRA HEAD STREET FIXTURE
F	NEW LED FIXTURE WITH 2 HEADS @180 (TO MATCH EXISTING, SEE DETAIL)
G	EXISTING TO BE REUSED TYPE 'A' POLE & FIXTURE



CAMBRIDGE
O'BRIEN HIGHWAY
LIGHTING PLANS
SHEET 100 OF 120

11554-LGHT.DWG Plotted on 13-Jul-2021 12:16 PM

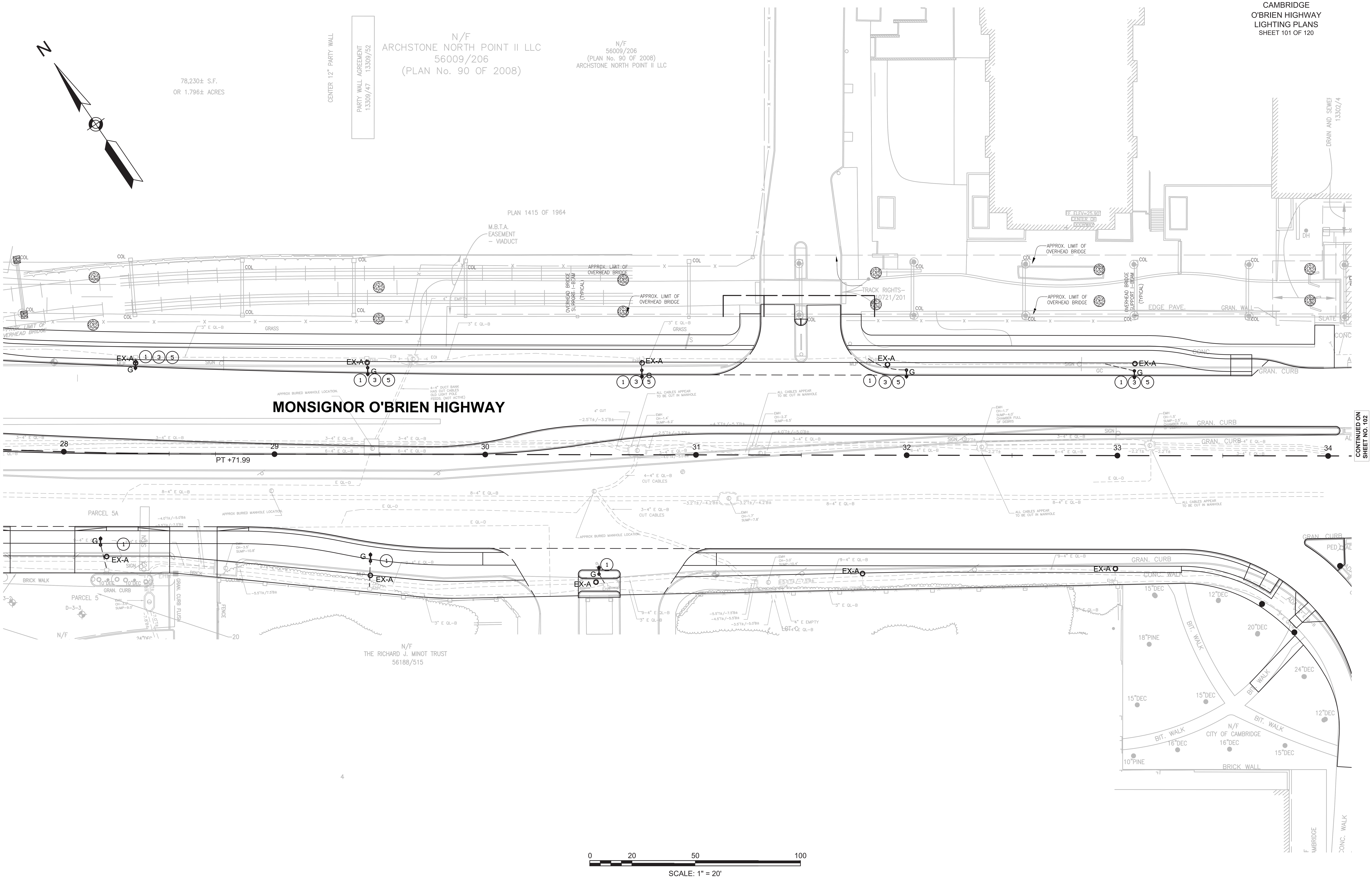

NORTH FIRST STREET
EAST STREET
MONSIGNOR O'BRIEN HIGHWAY
CAMBRIDGE STREET
FIRST STREET
N
N/F DW NP Q, R, V PROPERTY, LLC 69489/200 (PLAN No. 577 OF 2017) (PLAN No. 644 OF 2017) PARCEL R-2
N/F MBTA 13117/113, 13156/34 14199/193 (PLAN No. 1101 OF 1956) 19402/34 (PLAN No. 1358 OF 1961) PARCEL MBTA-2 (PLAN No. 577 OF 2017)
N/F ARCHSTONE NORTH POINT II LLC 56599/194 (PLAN No. 90 OF 2008)
EAST STREET ACCESS
10' ELECTRIC AND TELEPHONE EASEMENT 15666/146
EXISTING LIGHTING CONTROL CABINET
2" PVC - EXTEND EXISTING CIRCUIT FROM HANDHOLE TO "F" POLE.
2" PVC - EXTEND EXISTING CIRCUIT FROM HANDHOLE TO "F" POLE.
NEW LIGHT
NEW LIGHT
2" PVC MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT
2" PVC MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT
2" PVC MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT
EX-A
EX-B
EX-C
F
G
PT +17.98
PC +64.89
PI +57.19
PRC +84.65
PCC +10.13
PC +78.79
PI +44.86
PI +32.80
PI +55.39
103 +85.84
23
24
25
26
27
28
104
105
106
605
606
607
608
APPROX LIMIT OF OVERHEAD BRIDGE
APPROX. LIMIT OF OVERHEAD BRIDGE
1984 MAC LAYOUT
N/F MBTA
CONCRETE ABUTMENT SUPPORTING MBTA ELEVATED TRANSIT LINE
LEASE LINE
PARCEL 5A
PARCEL 6A
NOTE: PROPERTY LINES ARE VERY APPROXIMATE
PARCEL 6
PARCEL 5
SERVICE ACCESS & UTILITY EASEMENT BOOK 16059, PAGE 439
5' FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
5' FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
N/F TWO CANAL PARK, LLC 47840/24
5' FOUNDATION EASEMENT BOOK 16059,
4 STORY BRICK BLDG
BRICK WALK
GRAN. CURB
WROUGHT IRON FENCE
CONC WALL
STEPS
8" CONC POST
0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 99

CONTINUED ON SHEET NO. 101

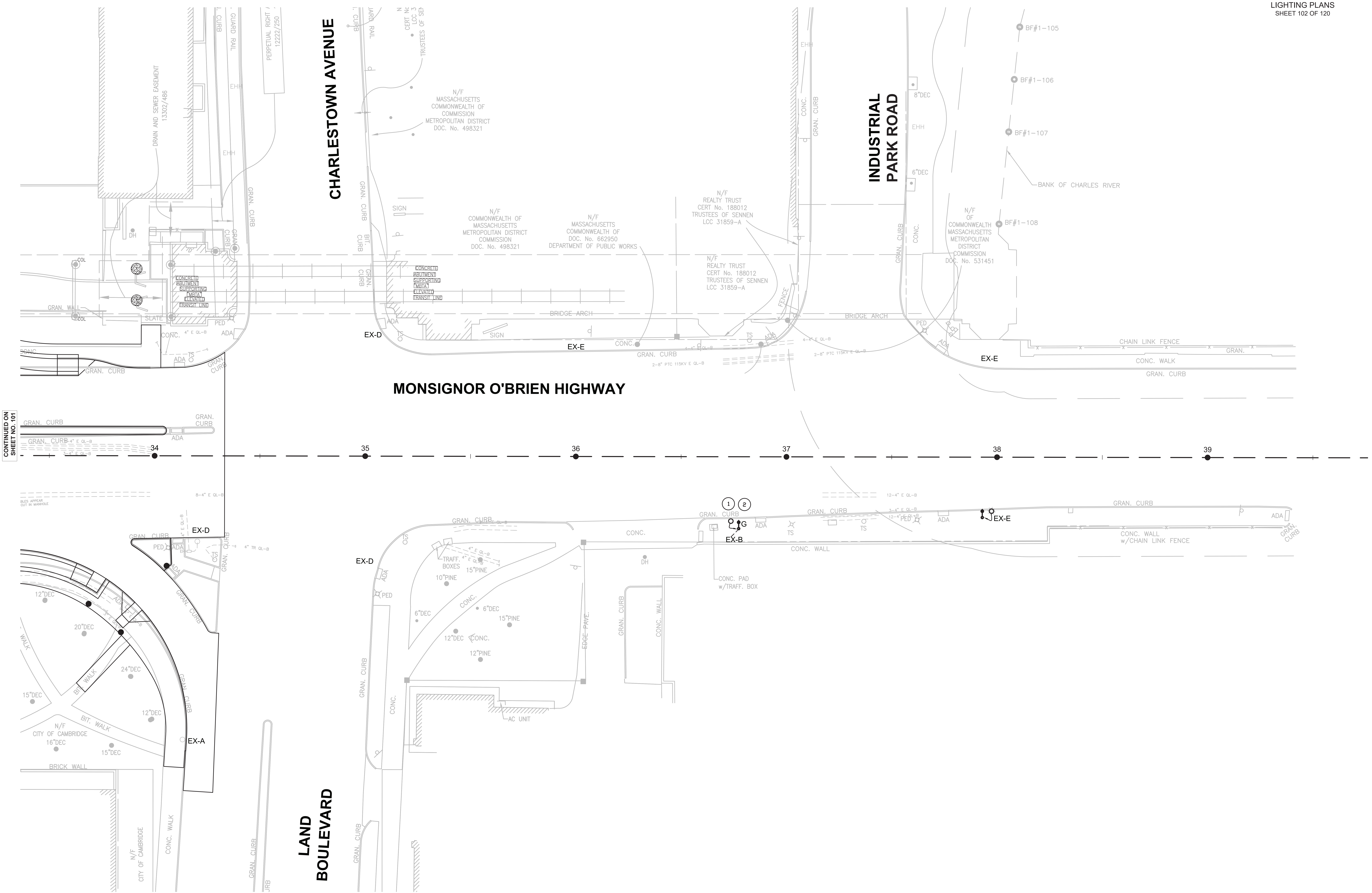
CONTINUED ON SHEET NO. 103

CONTINUED ON SHEET NO. 103


N
N/F
ARCHSTONE NORTH POINT II LLC
56009/206
(PLAN No. 90 OF 2008)
78,230± S.F.
OR 1.796± ACRES
CENTER 12" PARTY WALL
PARTY WALL AGREEMENT
13309/47 13309/52
N/F
56009/206
(PLAN No. 90 OF 2008)
ARCHSTONE NORTH POINT II LLC
PLAN 1415 OF 1964
M.B.T.A.
EASEMENT
- VIADUCT
APPROX. LIMIT OF OVERHEAD BRIDGE
OVERHEAD BRIDGE SUPPORT I-BEAM (TYPICAL)
TRACK RIGHTS- 10721/201
COL
GRASS
EDGE PAVE.
GRAN. WALL
SLATE
GRAN. CURB
CONC.
DRAIN AND SEWER 13302/4
EX-A
G
1
3
5
MONSIGNOR O'BRIEN HIGHWAY
CONTINUED ON SHEET NO. 100
CONTINUED ON SHEET NO. 102
28
29
30
31
32
33
34
PT +71.99
APPROX BURIED MANHOLE LOCATION
ALL CABLES APPEAR TO BE CUT IN MANHOLE
4-4" E QL-B CUT CABLES
3-4" E QL-B CUT CABLES
8-4" E QL-B
E QL-D
PARCEL 5A
PARCEL 5
BRICK WALK
GRAN. CURB
FENCE
N/F
THE RICHARD J. MINOT TRUST
56188/515
15"DEC
12"DEC
20"DEC
18"PINE
24"DEC
BIT. WALK
N/F
CITY OF CAMBRIDGE
16"DEC
10"PINE
BRICK WALL
CONC. WALK
0
20
50
100
SCALE: 1" = 20'

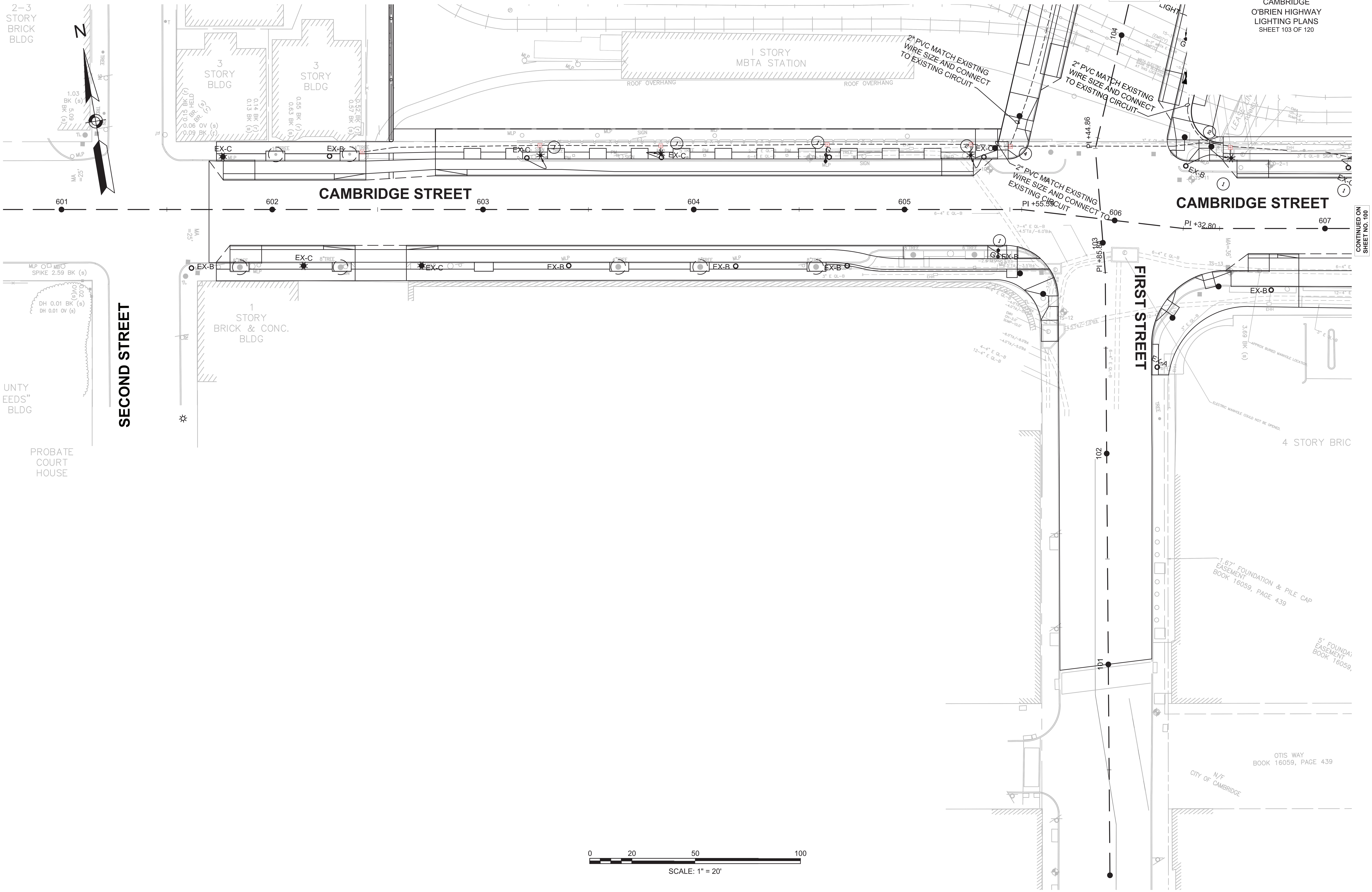
CAMBRIDGE
O'BRIEN HIGHWAY
LIGHTING PLANS
SHEET 102 OF 120

Plotted on 13-Jul-2021 12:16 PM
11554-LGHT.DWG


CHARLESTOWN AVENUE
INDUSTRIAL PARK ROAD
MONSIGNOR O'BRIEN HIGHWAY
LAND BOULEVARD
CONTINUED ON SHEET NO. 101
34
35
36
37
38
39
EX-A
EX-B
EX-D
EX-E
G
①
②
N/F MASSACHUSETTS COMMONWEALTH OF COMMISSION METROPOLITAN DISTRICT DOC. No. 498321
N/F COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 498321
N/F MASSACHUSETTS COMMONWEALTH OF DOC. No. 662950 DEPARTMENT OF PUBLIC WORKS
N/F REALTY TRUST CERT No. 188012 TRUSTEES OF SENNEN LCC 31859-A
N/F OF COMMONWEALTH MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION DOC. No. 531451
N/F CITY OF CAMBRIDGE
BF#1-105
BF#1-106
BF#1-107
BF#1-108
BANK OF CHARLES RIVER
DRAIN AND SEWER EASEMENT 13302/486
PERPETUAL RIGHT 12222/250
CONCRETE ABUTMENT SUPPORTING MBTA ELEVATED TRANSIT LINE
BRIDGE ARCH
CHAIN LINK FENCE
CONC. WALK
GRAN. CURB
GRAN. WALL
GUARD RAIL
BIT. CURB
CONC.
CONC. WALL
CONC. WALL w/CHAIN LINK FENCE
CONC. PAD w/TRAFF. BOX
TRAFF. BOXES
EDGE PAVE.
AC UNIT
BRICK WALL
BIT. WALK
CONC. WALK
FENCE
SIGN
SLATE
COL
DH
EHH
PED
ADA
TS
6"DEC
8"DEC
10"PINE
12"DEC
12"PINE
15"DEC
15"PINE
16"DEC
20"DEC
24"DEC
2-8" PTC 115KV E QL-B
12-4" E QL-B
4" TR QL-B
8-4" E QL-B
BLES APPEAR OUT IN MANHOLE

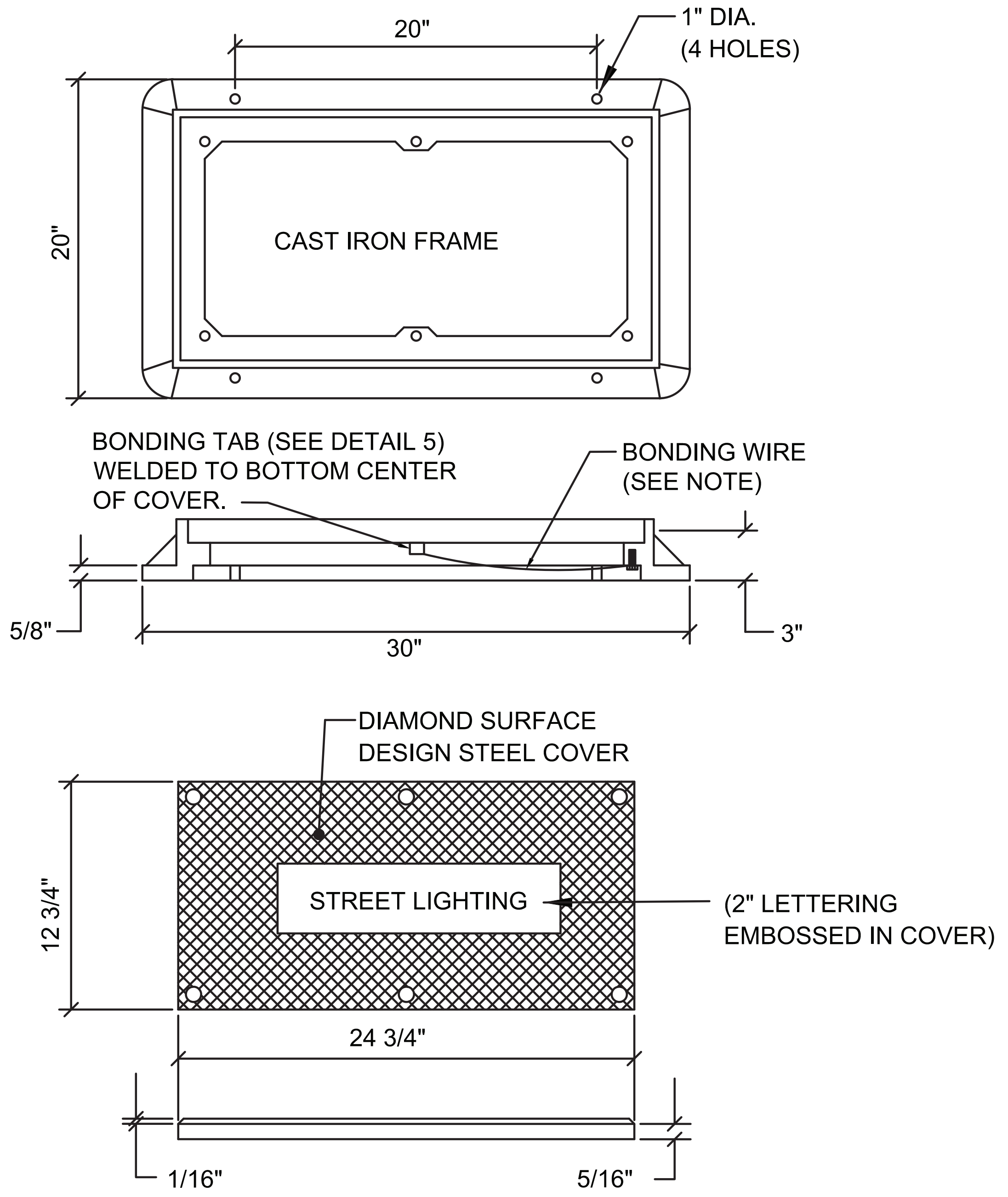
CAMBRIDGE
O'BRIEN HIGHWAY
LIGHTING PLANS
SHEET 103 OF 120

CONTINUED ON SHEET NO. 100

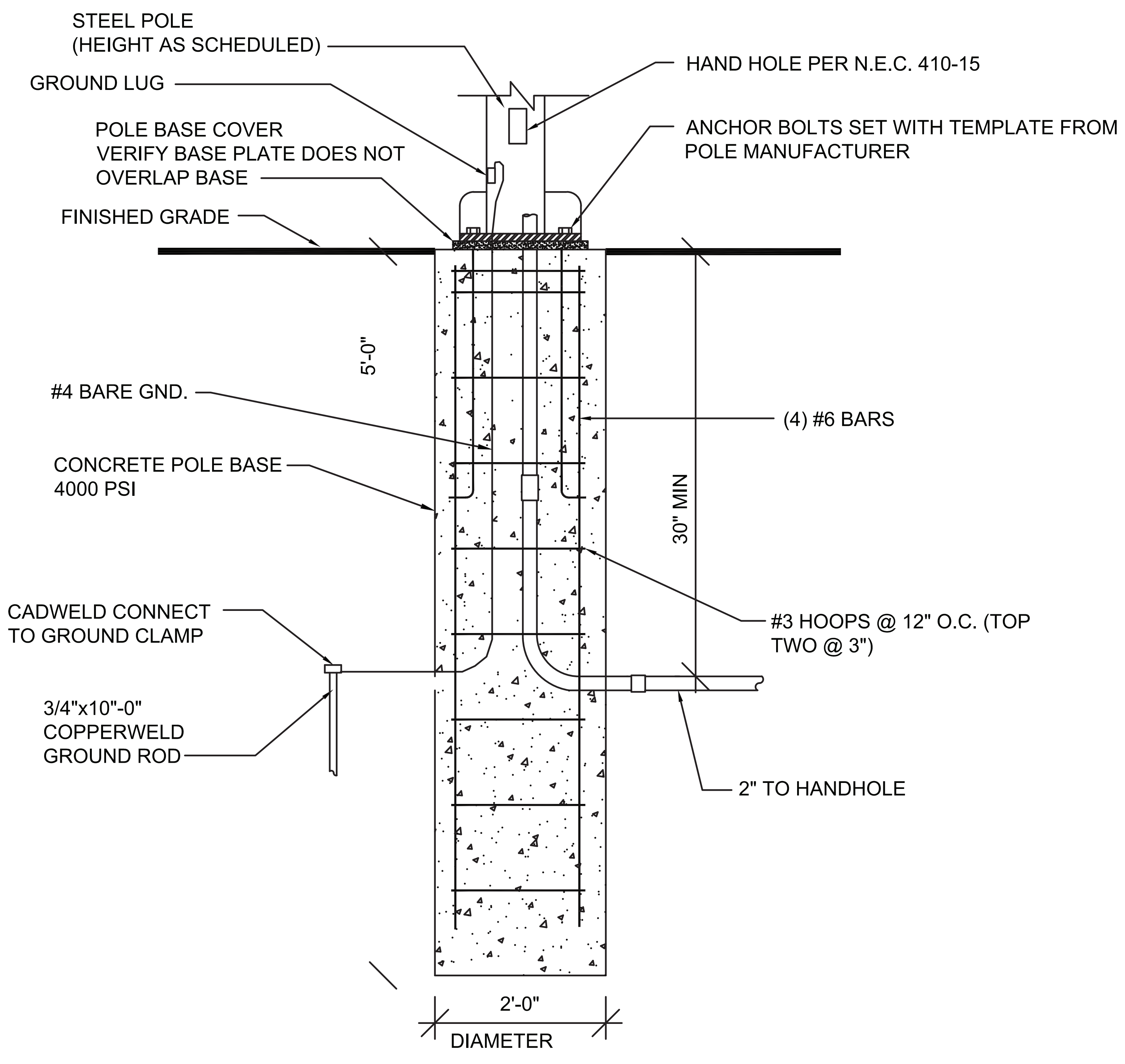


2–3 STORY BRICK BLDG
3 STORY BLDG
3 STORY BLDG
1 STORY MBTA STATION
ROOF OVERHANG
N
CAMBRIDGE STREET
601
602
603
604
605
606
607
PI +44.86
PI +55.59
PI +32.80
PI +85.03
104
102
101
2" PVC MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT
2" PVC MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT
2" PVC MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT
EX-C
EX-B
EX-A
SECOND STREET
FIRST STREET
1 STORY BRICK & CONC. BLDG
UNTY EEDS" BLDG
PROBATE COURT HOUSE
4 STORY BRIC
1.67' FOUNDATION & PILE CAP EASEMENT BOOK 16059, PAGE 439
5' FOUNDA EASEMENT BOOK 16059,
OTIS WAY BOOK 16059, PAGE 439
N/F CITY OF CAMBRIDGE
ELECTRIC MANHOLE COULD NOT BE OPENED.
0
20
50
100
SCALE: 1" = 20'

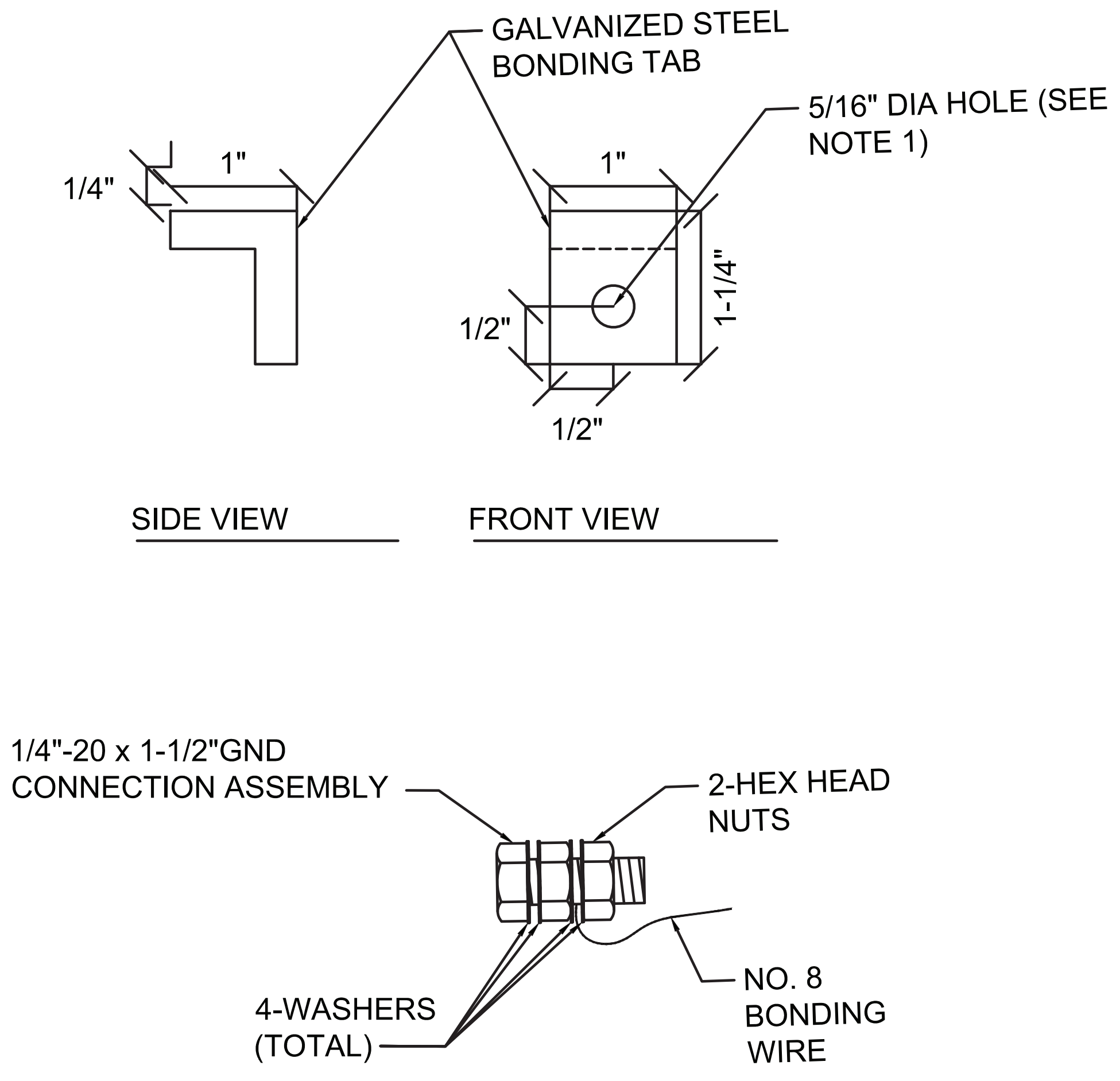
CONTINUED ON SHEET NO. 100



TYPICAL HANDHOLE COVER NOT TO SCALE



NEW POLE BASE DETAIL
NOT TO SCALE

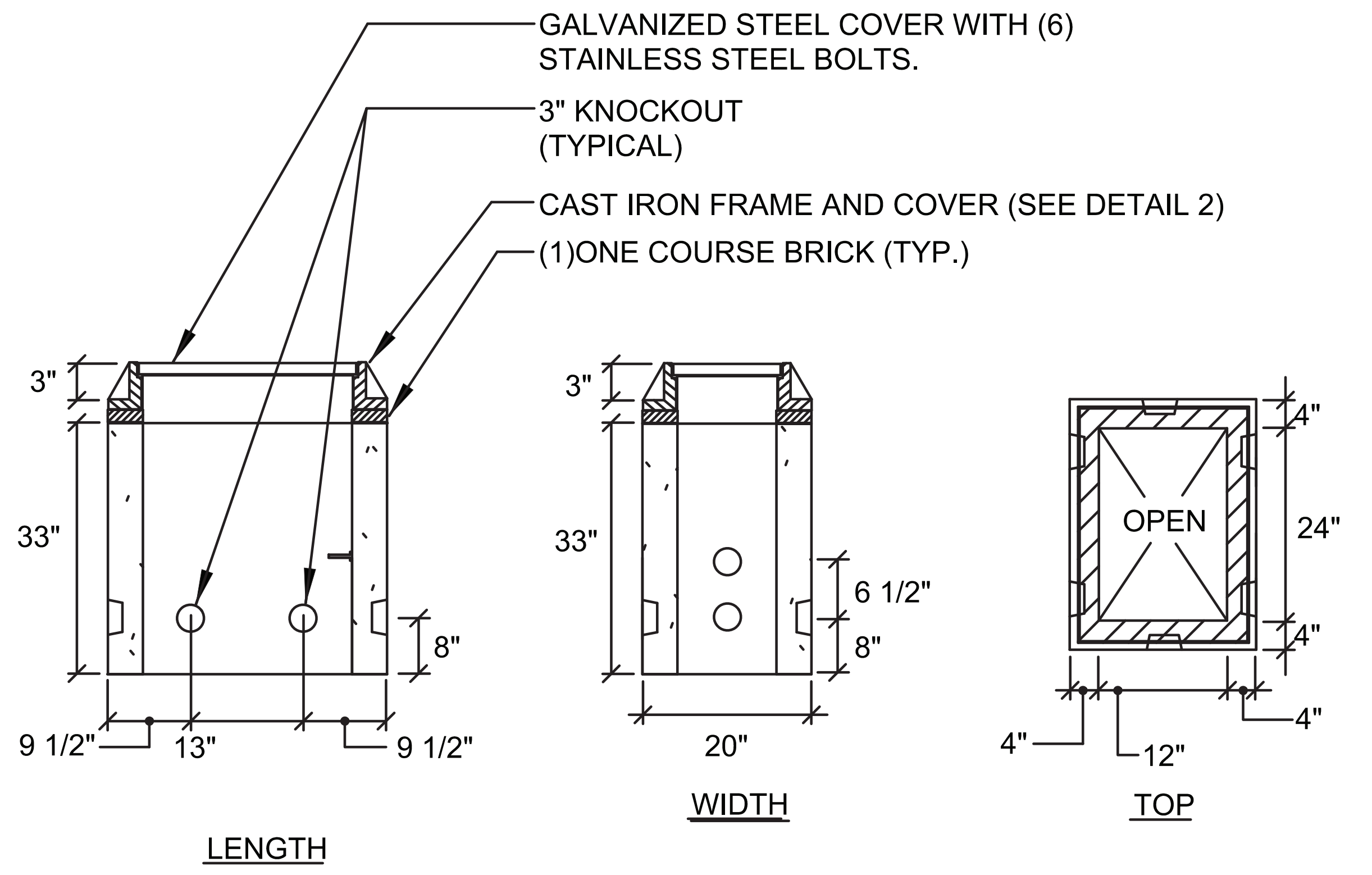


GALVANIZED STEEL BONDING TAB NOT TO SCALE

NOTES:

1. ATTACH 3 FOOT LENGTH OF NO. 8 BONDING WIRE TO GALVANIZED STEEL BONDING TAB WITH 1/4"-20 x 1-1/2" LONG STAINLESS STEEL HEX HEAD BOLT, STAINLESS STEEL FLAT WASHERS AND 2 HEX NUTS. ATTACH FREE END OF BONDING WIRE TO BONDING WIRE ROUTED THROUGH PULL BOX.

2. BONDING TAB WELDED TO BOTTOM CENTER OF COVER.

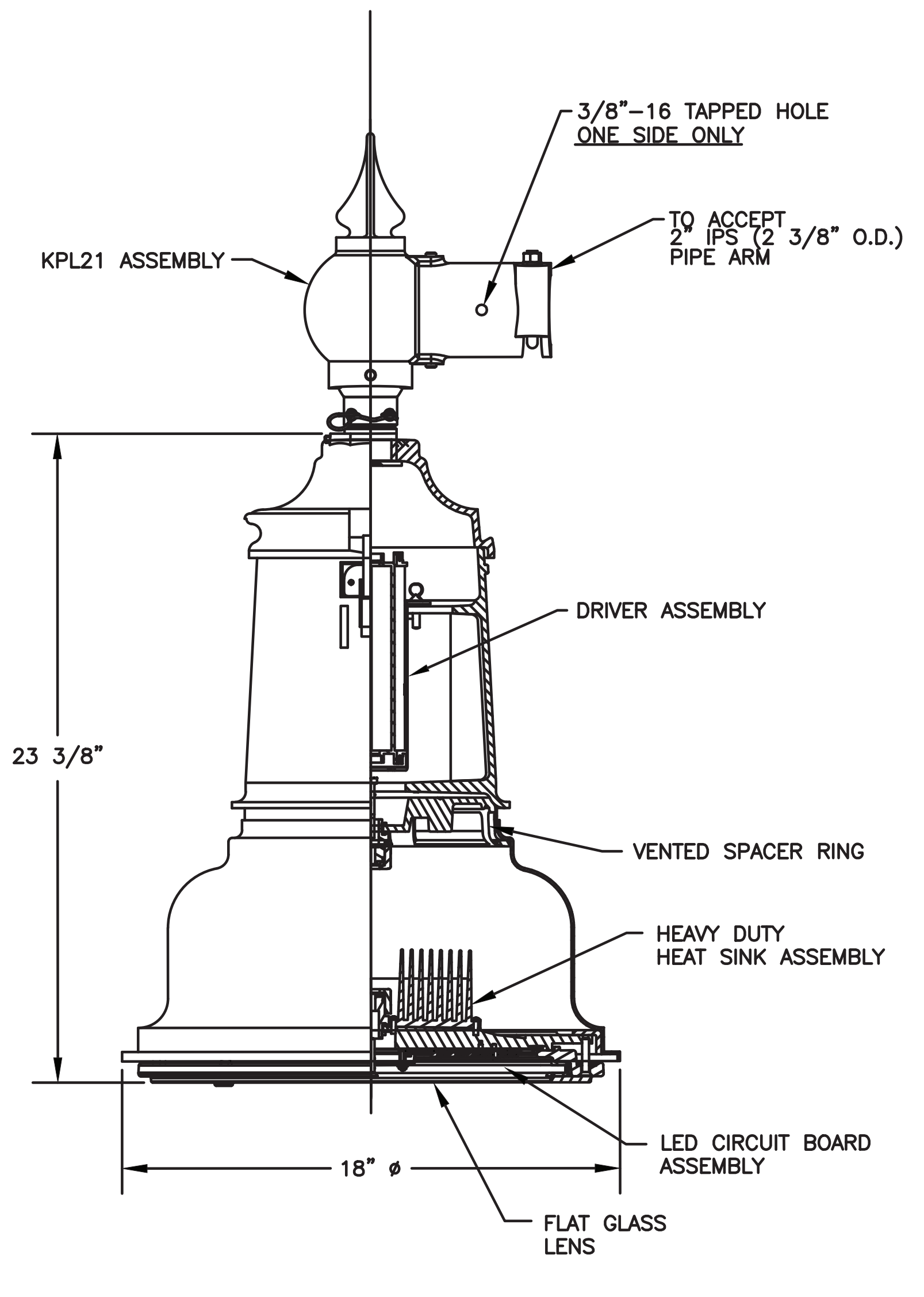


TYPICAL PRE-CAST CONCRETE HANDHOLE NOT TO SCALE

CAMBRIDGE
O'BRIEN HIGHWAY
LIGHTING PLANS
SHEET 105 OF 120

11554-LGHT.DWG Plotted on 13-Jul-2021 12:16 PM

REV.	ALTERATION	DATE	BY
A	IES CLASS. WAS TYPE III; WATTAGE WAS 165W; COLOR WAS TEXTURED FED. STD. 595 COLOR #014066;	11/18/11	A.A.



SPECIFICATIONS

CATALOGUE NO.:	K811-FAFL-II-165(SSL) -16000-120-KPL21
QUANTITY:	
OPTICAL SYSTEM:	FLAT ARRAY FLAT LENS
IES LTG. CLASS.:	TYPE II
INPUT WATTAGE:	146W (CERTIFIED @ 145.79W) SOLID STATE LIGHTING
SERIES:	16000
CCT:	4500K
LINE VOLTAGE:	120V
CLASSIFICATION:	FULL CUT-OFF

PAINT REQUIREMENTS:

COLOR:	BLACK
TEXTURED FINISH:	☐
SMOOTH FINISH:	☒

BALLAST TO BE SUPPLIED:

BALLAST TYPE:	ELECTRONIC
BALLAST MANU.:	–
CATALOG NUMBER:	–
OPTIONS:	KPL21 LEVELING DEVICE QUICK DISCONNECT
OTHER:	

King Luminaire • StressCrete • Est. 1953
STRESSCRETE
GROUP

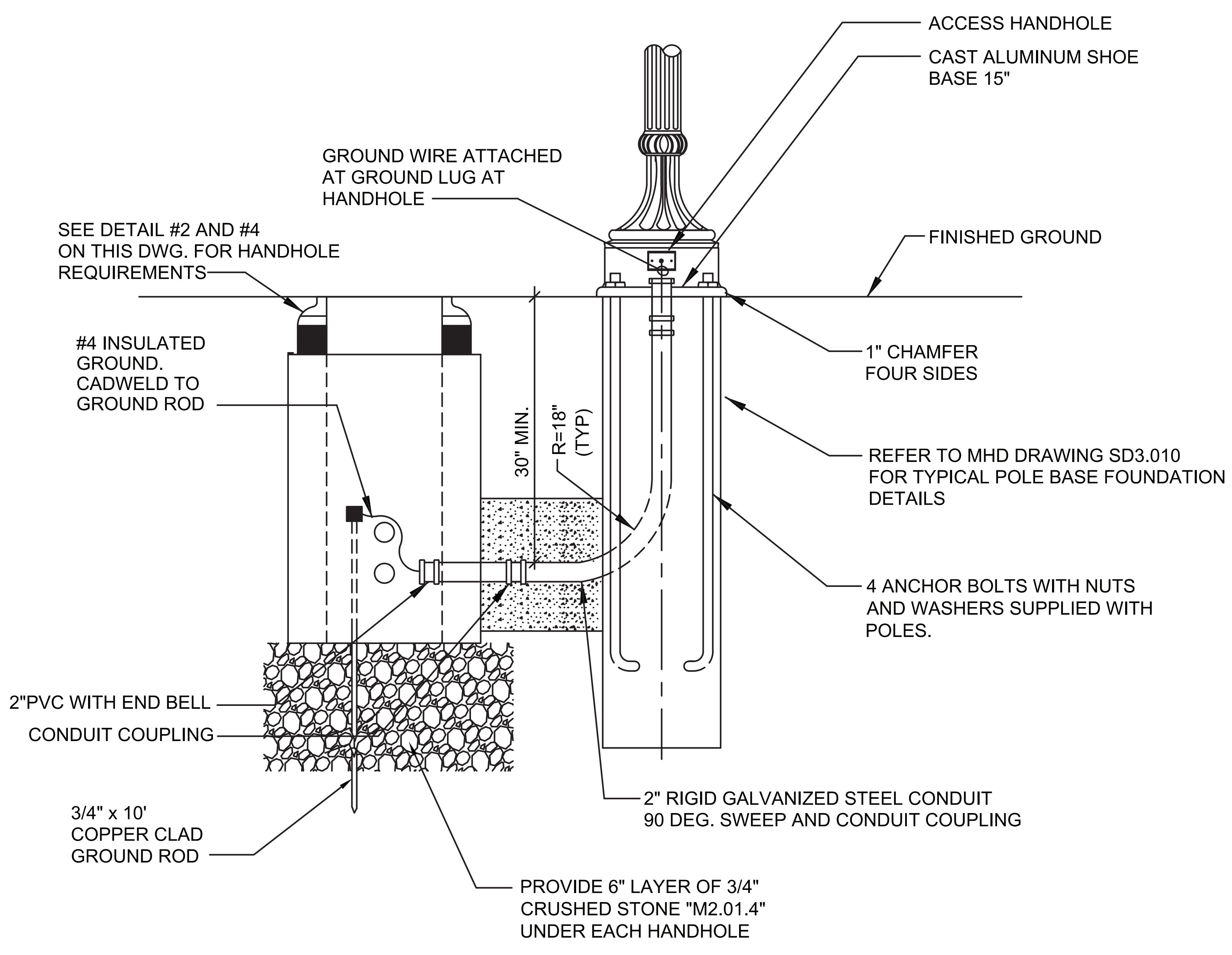
Manufacturing Locations:
Burlington, Ontario 1-800-268-7809
Northport, Alabama 1-800-435-6563
Atchison, Kansas 1-800-837-1024
Jefferson, Ohio 1-800-268-7809

PROJECT/CUSTOMER:
MASS DOT – MONSIGNOR O'BRIEN HWY

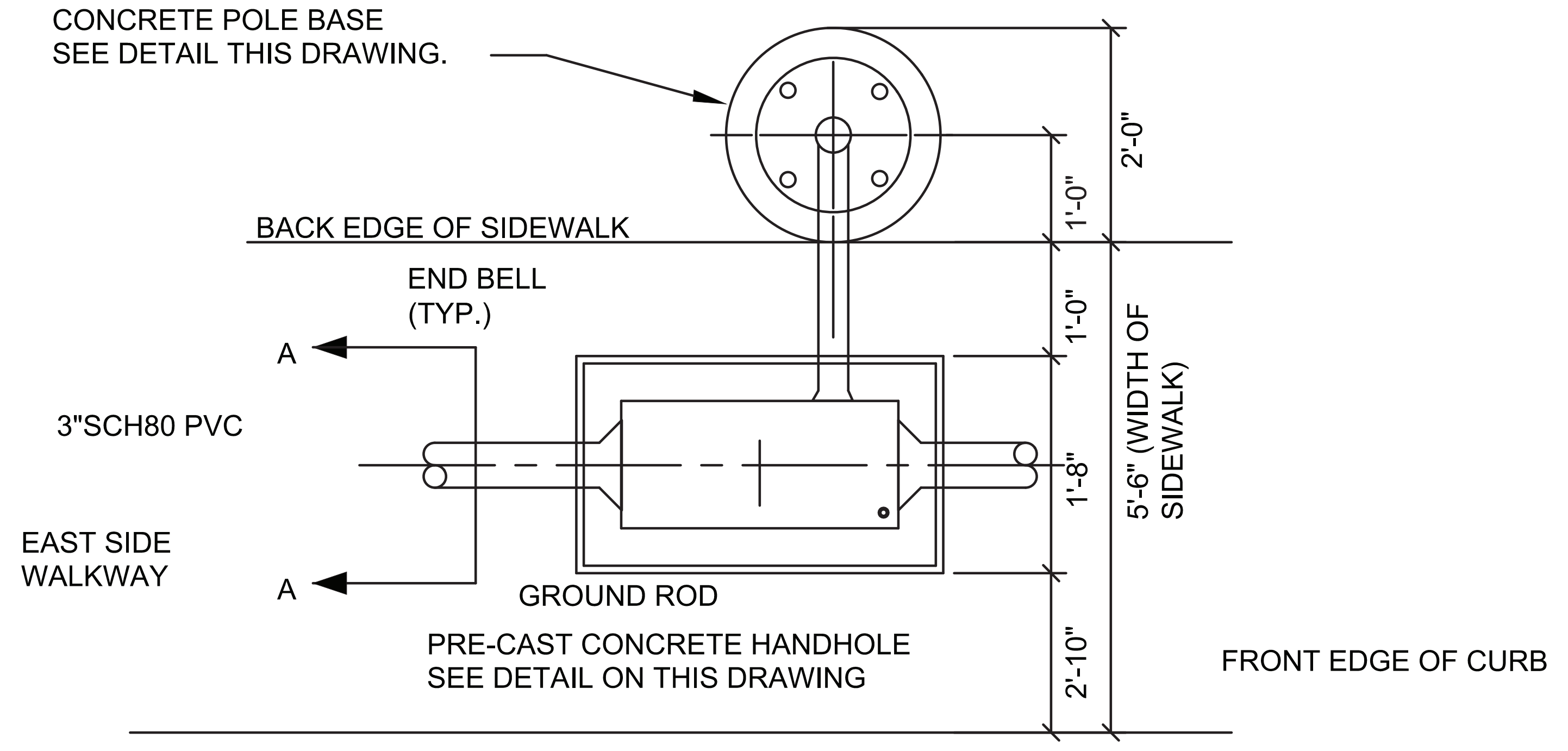
DRAWN BY:	AT:	CHECKED BY:	DATE:	REVISION:
A. ALVELA	SC1		11/03/11	A

DRAWING TYPE:
CONCEPT DRAWING

DRAWING NUMBER:
206A6477-1

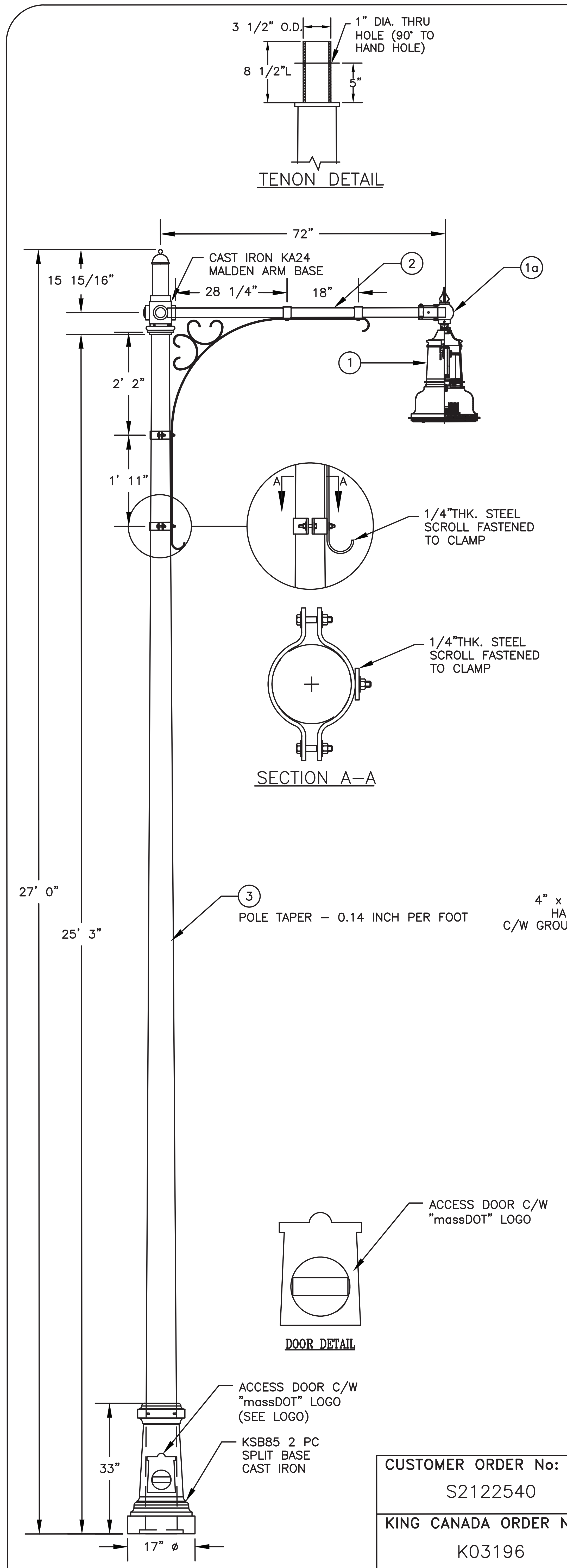

ACCESS HANDHOLE
CAST ALUMINUM SHOE BASE 15"
GROUND WIRE ATTACHED AT GROUND LUG AT HANDHOLE
SEE DETAIL #2 AND #4 ON THIS DWG. FOR HANDHOLE REQUIREMENTS
FINISHED GROUND
#4 INSULATED GROUND. CADWELD TO GROUND ROD
30" MIN.
R=18" (TYP)
1" CHAMFER FOUR SIDES
REFER TO MHD DRAWING SD3.010 FOR TYPICAL POLE BASE FOUNDATION DETAILS
4 ANCHOR BOLTS WITH NUTS AND WASHERS SUPPLIED WITH POLES.
2"PVC WITH END BELL
CONDUIT COUPLING
2" RIGID GALVANIZED STEEL CONDUIT 90 DEG. SWEEP AND CONDUIT COUPLING
3/4" x 10' COPPER CLAD GROUND ROD
PROVIDE 6" LAYER OF 3/4" CRUSHED STONE "M2.01.4" UNDER EACH HANDHOLE

TYPICAL HANDHOLE AND POLE FOUNDATION NOT TO SCALE


CONCRETE POLE BASE SEE DETAIL THIS DRAWING.
2'-0"
1'-0"
BACK EDGE OF SIDEWALK
END BELL (TYP.)
A
1'-0"
3"SCH80 PVC
1'-8"
5'-6" (WIDTH OF SIDEWALK)
EAST SIDE WALKWAY
A
GROUND ROD
PRE-CAST CONCRETE HANDHOLE SEE DETAIL ON THIS DRAWING
2'-10"
FRONT EDGE OF CURB

TYPICAL HANDHOLE AND POLE ARRANGEMENT NOT TO SCALE

REV.	ALTERATION	DATE	BY
A	LENS WAS SHALLOW	11/03/11	A.A.
B	LUMINAIRE WAS HGFL–III–250–HPS	11/18/11	A.A.
C	POLE TIP WAS 3.18" O.D.; POLE HEIGHT WAS 27' 0"	12/16/11	A.A.
D	POLE TIP WAS 3.465" O.D.; POLE BUTT WAS 7" O.D.; BASEPLATE WAS 11" SQU. x 1" THK.	01/04/12	A.A.


TENON DETAIL

SECTION A–A

DOOR DETAIL

3 1/2" O.D.
1" DIA. THRU HOLE (90° TO HAND HOLE)
8 1/2"L
5"
72"
15 15/16"
CAST IRON KA24 MALDEN ARM BASE
28 1/4"
18"
②
①a
①
2' 2"
1' 11"
A
A
1/4"THK. STEEL SCROLL FASTENED TO CLAMP
1/4"THK. STEEL SCROLL FASTENED TO CLAMP
27' 0"
25' 3"
③
POLE TAPER – 0.14 INCH PER FOOT
ACCESS DOOR C/W "massDOT" LOGO
ACCESS DOOR C/W "massDOT" LOGO (SEE LOGO)
KSB85 2 PC SPLIT BASE CAST IRON
33"
17" ø

① LUMINAIRE SPECIFICATIONS

CATALOGUE NO.: K811–FAFL–II–165(SSL)–16000–120–KPL21
QUANTITY:
OPTICAL SYSTEM: FLAT ARRAY FLAT LENS
IES LTG. CLASS.: TYPE II
INPUT WATTAGE: 146W (CERTIFIED @ 145.79W) SOLID STATE LIGHTING
SERIES: 16000
CCT: 4500K
LINE VOLTAGE: 120V
CLASSIFICATION: FULL CUT–OFF

BALLAST TO BE SUPPLIED:

BALLAST TYPE: ELECTRONIC
BALLAST MANU.: –
CATALOG NUMBER: –

OPTIONS: KPL21 LEVELING DEVICE
QUICK DISCONNECT

② ARM SPECIFICATIONS

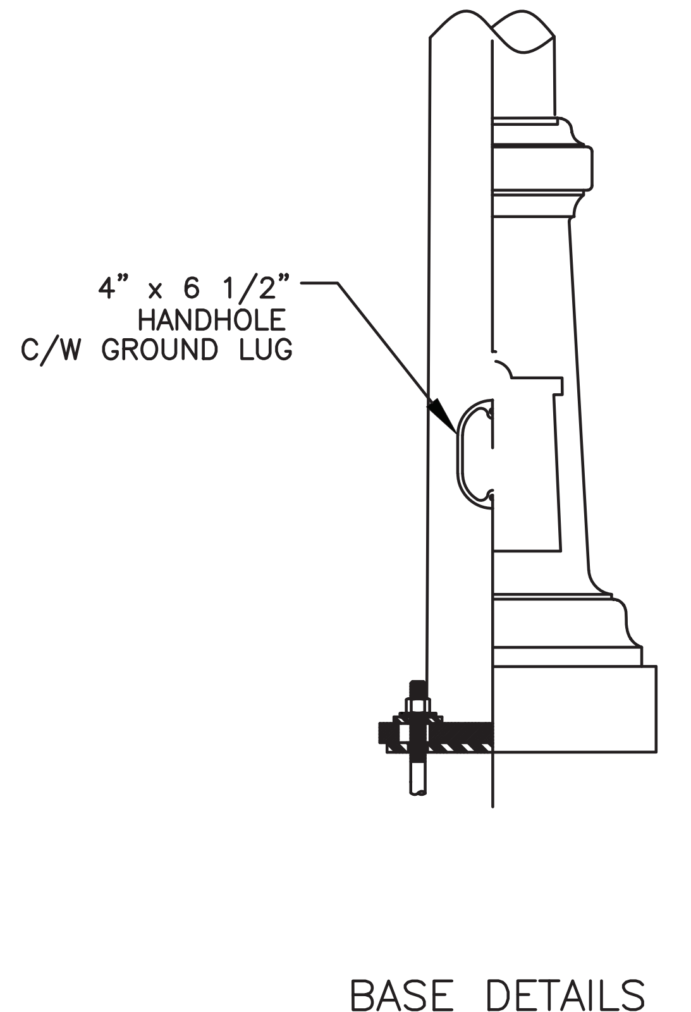
CATALOGUE NO.: KA24–T–1–6'
QUANTITY:
MATERIAL: STEEL
OPTIONS:

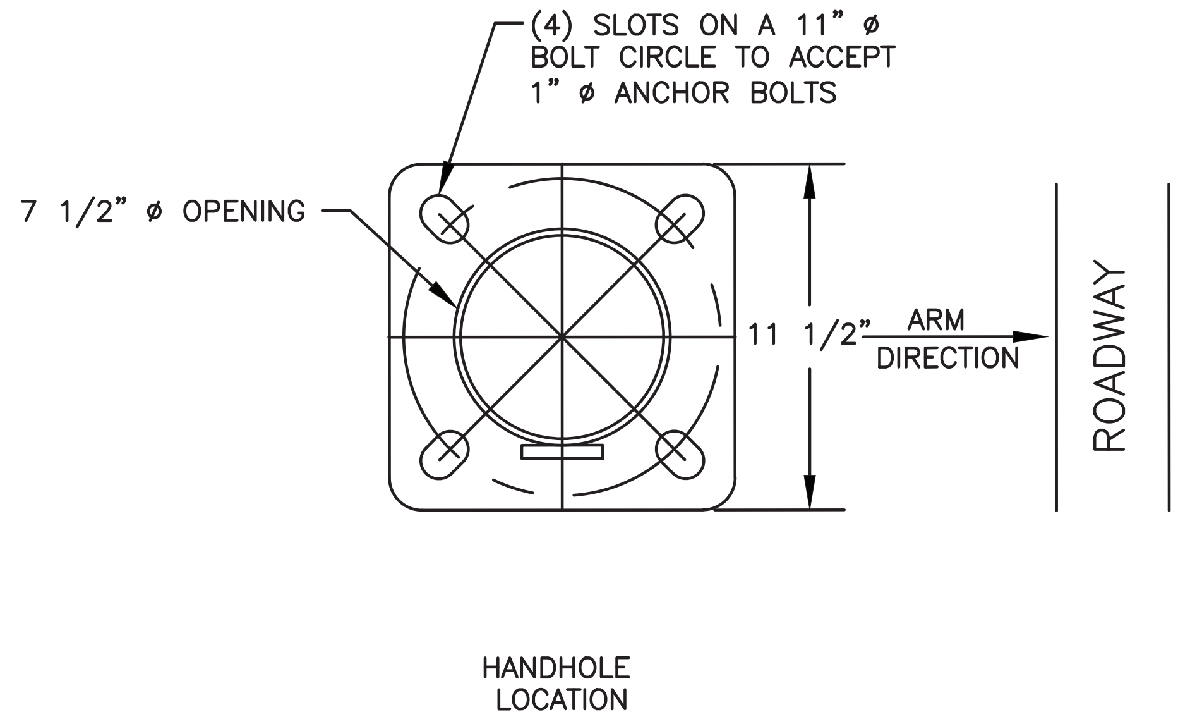
③ POLE SPECIFICATIONS

CATALOGUE NO.: KSB85–RF–S–25.25
QUANTITY:
MATERIAL: TAPERED 7Ga. STL. SHAFT
2–PC. SPLIT CAST IRON BASE
TOP SIZE: 4.477" O.D.
BUTT SIZE: 8" O.D.
OVERALL HGT.: 25' 3"
ANCHOR BOLTS: (4) 1" ø
BOLT CIRCLE: 11" – 12 1/8" ø BOLT CIRCLE

PAINT SPECIFICATIONS

- 2 COATS POWDERCOATING OVER HOT–DIPPED GALVANIZING
- COLOR TO BE SMOOTH BLACK


BASE DETAILS


(4) SLOTS ON A 11" ø BOLT CIRCLE TO ACCEPT 1" ø ANCHOR BOLTS
7 1/2" ø OPENING
11 1/2"
ARM DIRECTION
ROADWAY
HANDHOLE LOCATION

BASEPLATE DETAIL

MAT'L: 7/8" THK. STEEL

CUSTOMER APPROVAL & DATE: ____________

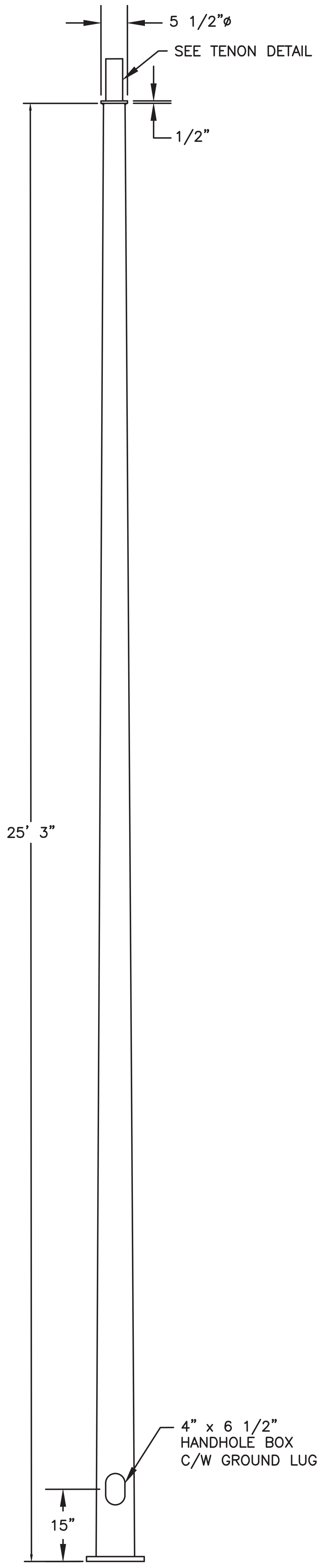
King Luminaire • StressCrete • Est. 1953
STRESSCRETE GROUP

Manufacturing Locations:
Burlington, Ontario 1–800–268–7809
Northport, Alabama 1–800–435–6563
Atchison, Kansas 1–800–837–1024
Jefferson, Ohio 1–800–268–7809

CUSTOMER ORDER No:	S2122540
KING CANADA ORDER No:	K03196
KING U.S. ORDER No:	A06491

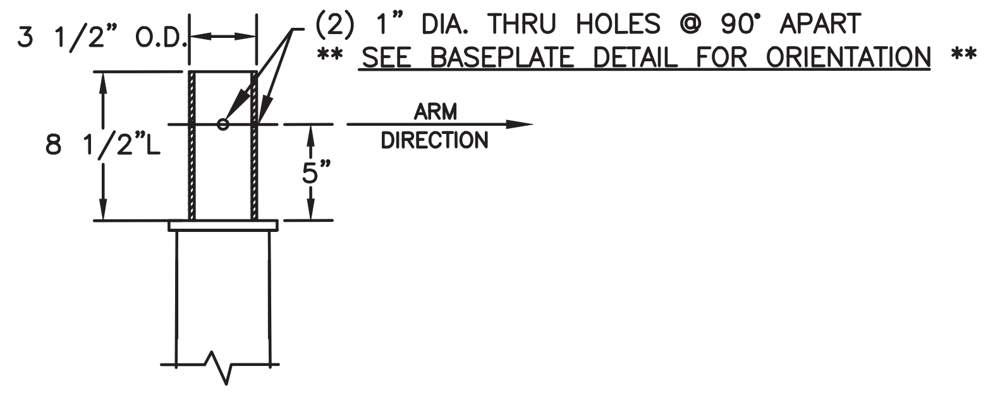
PROJECT/CUSTOMER: MASS DOT – MONSIGNOR O'BRIEN HWY				
DRAWN BY: A. ALVELA	AT: SC1	CHECKED BY:	DATE: 11/03/11	REVISION: D
DRAWING TYPE: APPROVAL DWG.			DRAWING NUMBER: 206A6477–2	

REV.	ALTERATION	DATE	BY
A	POLE TIP WAS 3.465" O.D.; POLE BUTT WAS 7" O.D. BASEPLATE WAS 11" SQU. x 1" THK.	01/04/12	A.A.

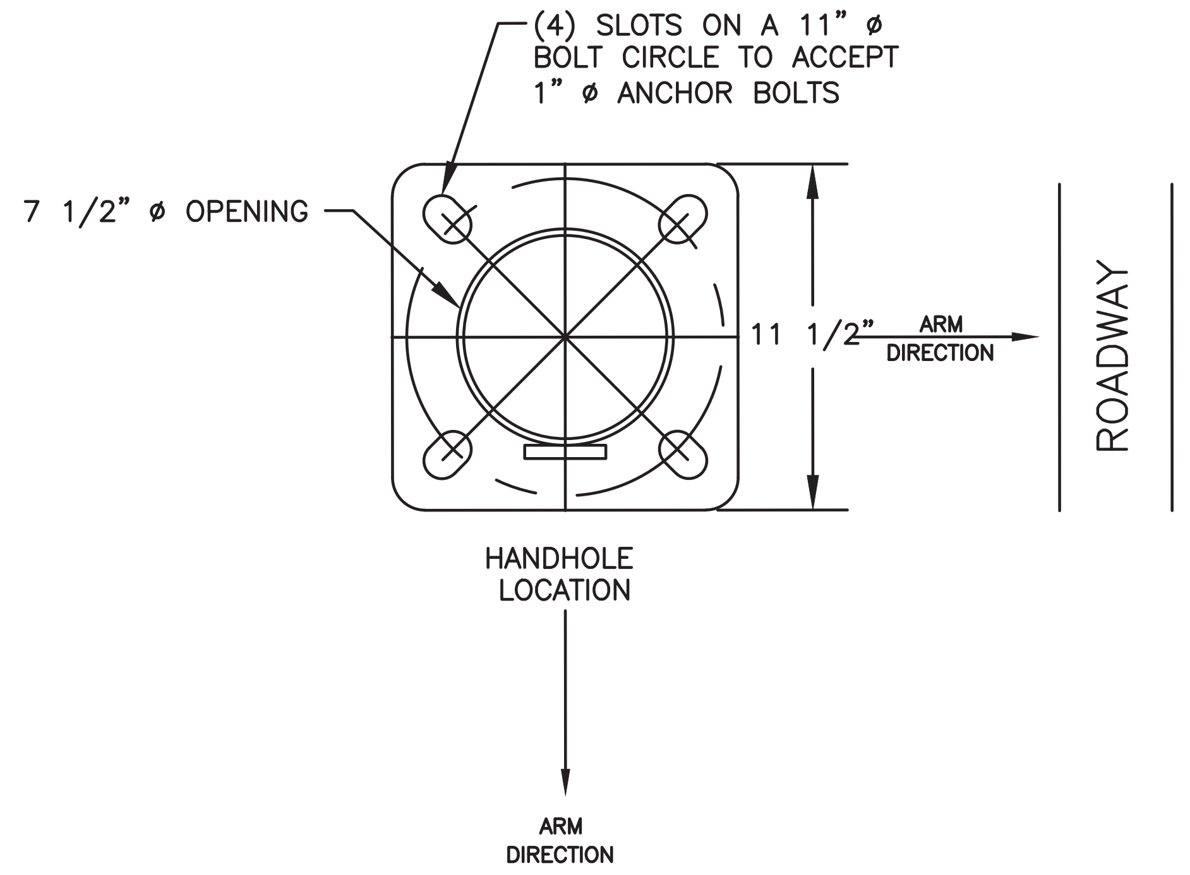


③ POLE SPECIFICATIONS

CATALOGUE NO.: DS210–800A253–P9–GF–HH–AB
QUANTITY:
MATERIAL: TAPERED 7Ga. STL. SHAFT
PAINT: SMOOTH BLACK
TOP SIZE: 4.477" O.D.
BUTT SIZE: 8" O.D.
OVERALL HGT.: 25' 3"
ANCHOR BOLTS: (4) 1" ø
BOLT CIRCLE: 11" – 12 1/8" ø BOLT CIRCLE


3 1/2" O.D.
(2) 1" DIA. THRU HOLES @ 90° APART
** SEE BASEPLATE DETAIL FOR ORIENTATION **
ARM DIRECTION
8 1/2"L
5"

TENON DETAIL



BASEPLATE DETAIL

MAT'L: 7/8" THK. STEEL

CUSTOMER APPROVAL & DATE: ____________

King Luminaire • StressCrete • Est. 1953
STRESSCRETE GROUP

Manufacturing Locations:
Burlington, Ontario 1–800–268–7809
Northport, Alabama 1–800–435–6563
Atchison, Kansas 1–800–837–1024
Jefferson, Ohio 1–800–268–7809

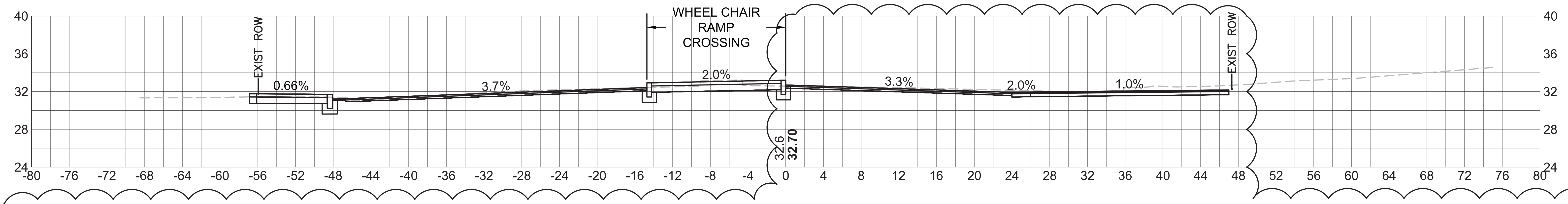
CUSTOMER ORDER No:	S2122540
KING CANADA ORDER No:	K03196
KING U.S. ORDER No:	A06491

PROJECT/CUSTOMER: MASS DOT – MONSIGNOR O'BRIEN HWY				
DRAWN BY: A. ALVELA	AT: SC1	CHECKED BY:	DATE: 01/02/12	REVISION: A
DRAWING TYPE: APPROVAL DWG.			DRAWING NUMBER: 206A6477–4	

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 107 OF 120

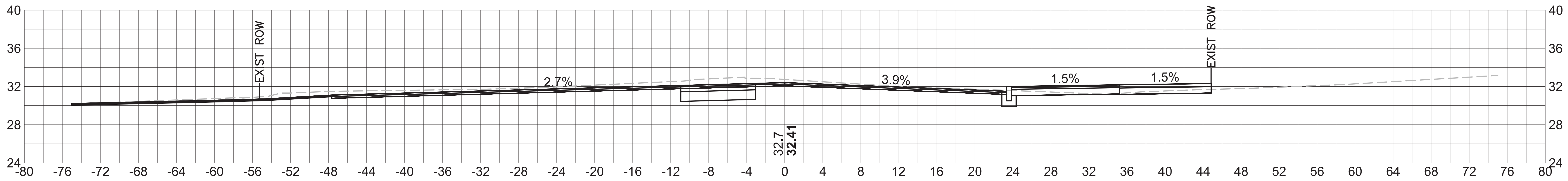
11554-XSECT.DWG 13-Jul-2021

17+50



CUT	38.55	SF
FILL	0	SF

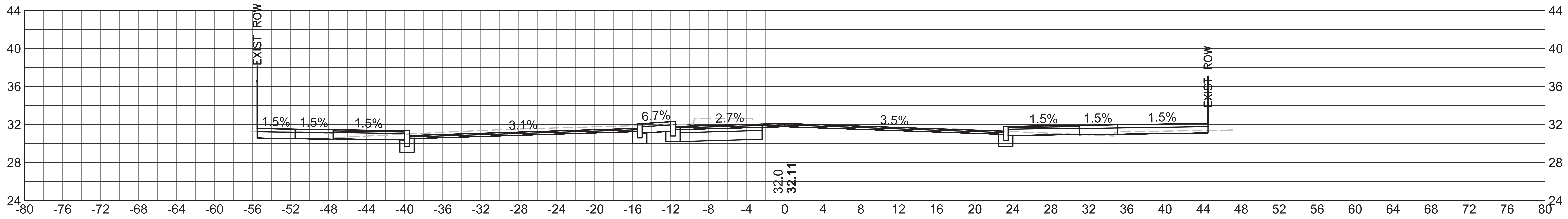
17+00



CUT	7.68	SF
FILL	0.0030	SF

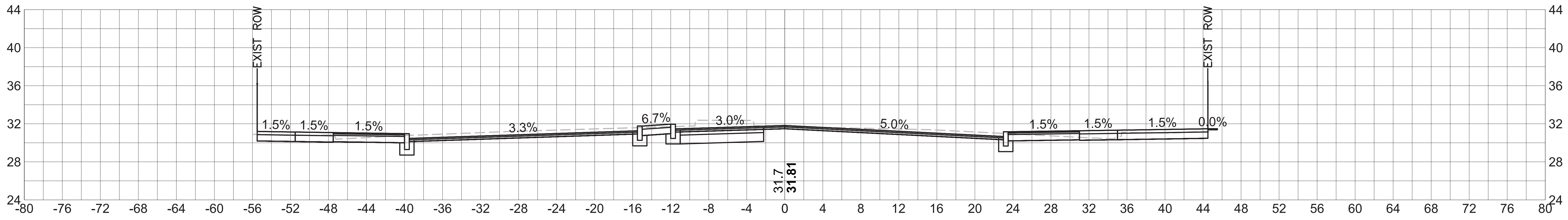
PHASE 1

16+50

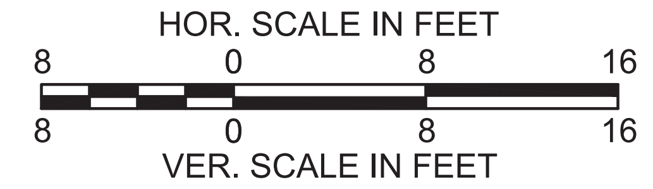


CUT	42.61	SF
FILL	0.26	SF

16+00



CUT	51.93	SF
FILL	0	SF



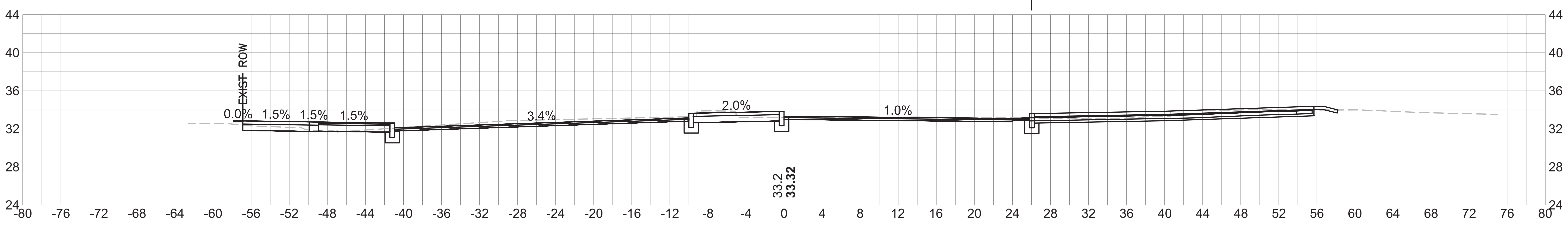
NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 108 OF 120

11554-XSECT.DWG 13-Jul-2021

19+00

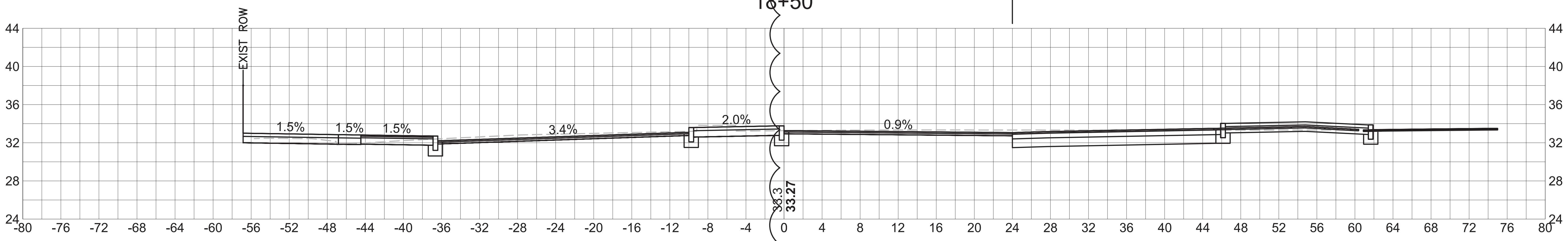
SEE SHEET 33 FOR ADDITIONAL GRADING INFORMATION



CUT	38.54	SF
FILL	0.03	SF

18+50

SEE PHASE 1 PLAN SET FOR ADDITIONAL GRADING INFORMATION

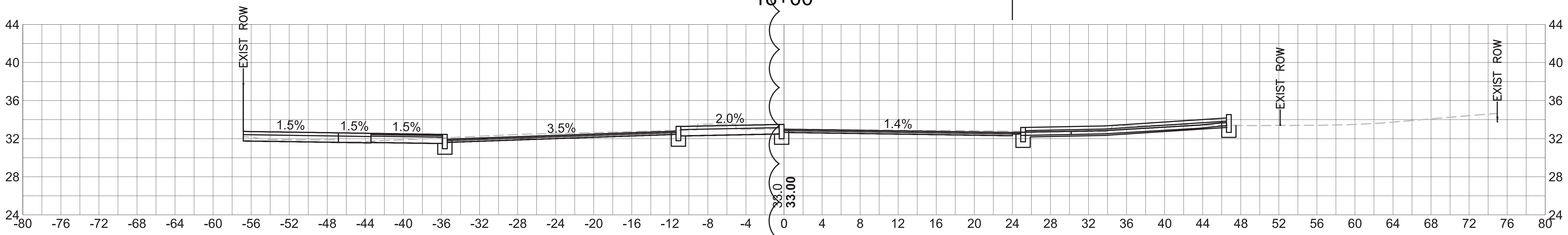


CUT	64.08	SF
FILL	0.0290	SF

PHASE 1

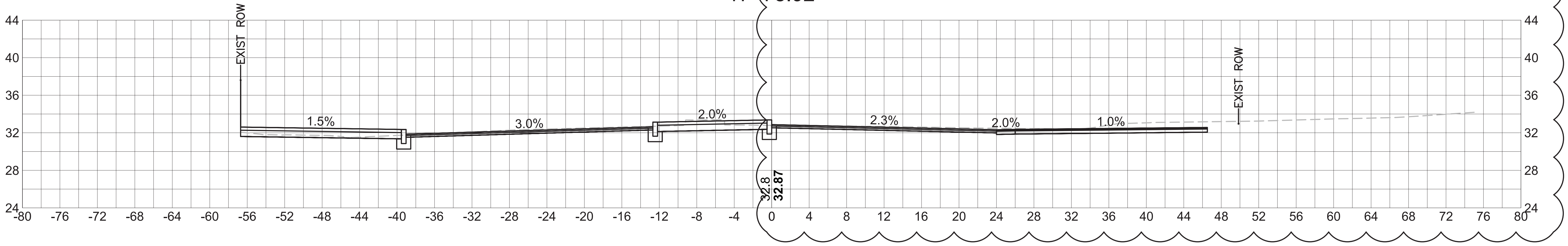
18+00

SEE PHASE 1 PLAN SET FOR ADDITIONAL GRADING INFORMATION

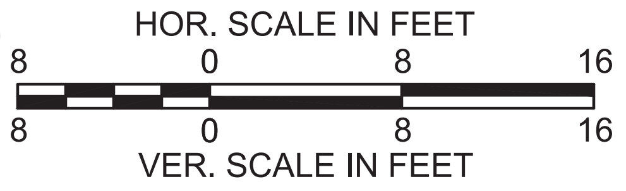


CUT	35.61	SF
FILL	0	SF

17+78.92



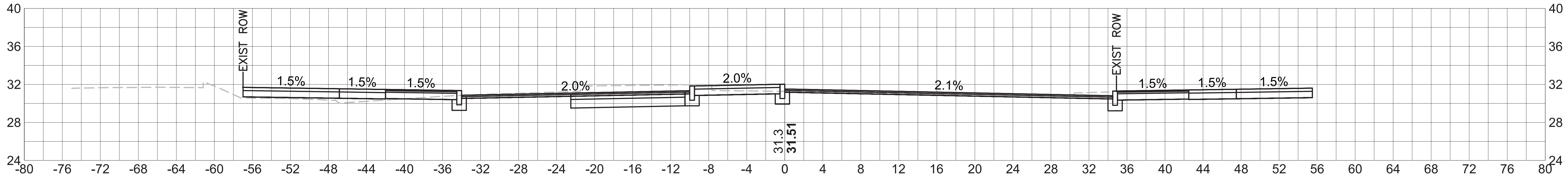
CUT	37.06	SF
FILL	0	SF



NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.

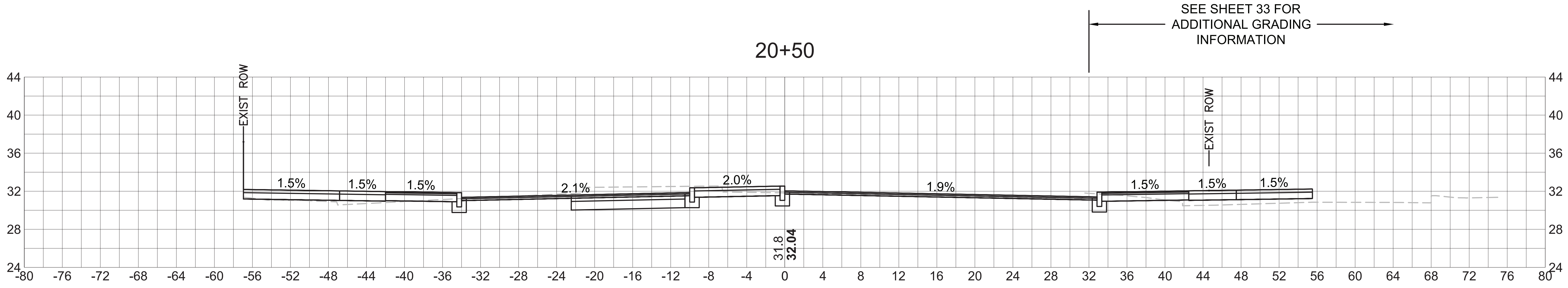
CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 109 OF 120

21+00



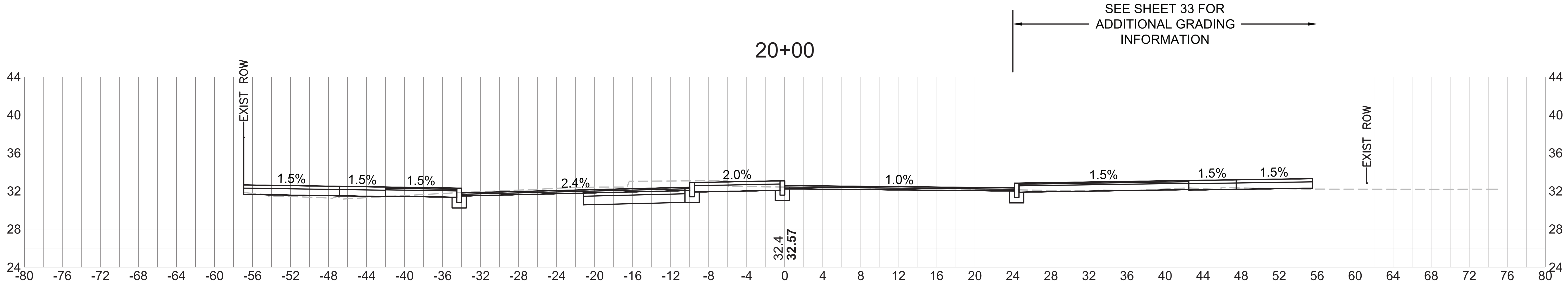
CUT	68.54	SF
FILL	2.00	SF

20+50



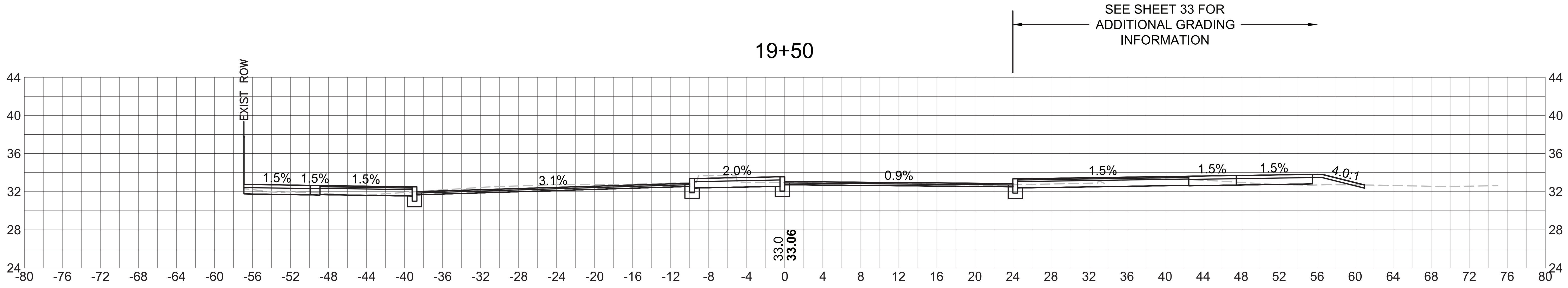
CUT	45.58	SF
FILL	12.14	SF

20+00



CUT	42.602678	SF
FILL	2.30	SF

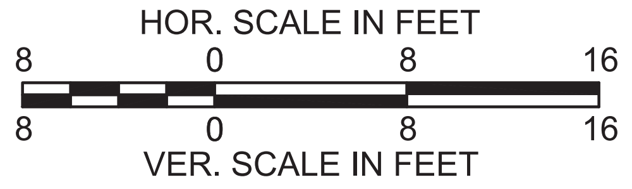
19+50



CUT	31.85	SF
FILL	2.17	SF

NOTES:

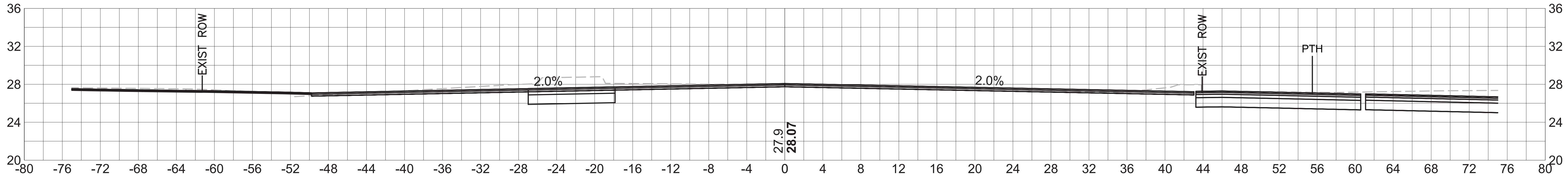
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.



CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 110 OF 120

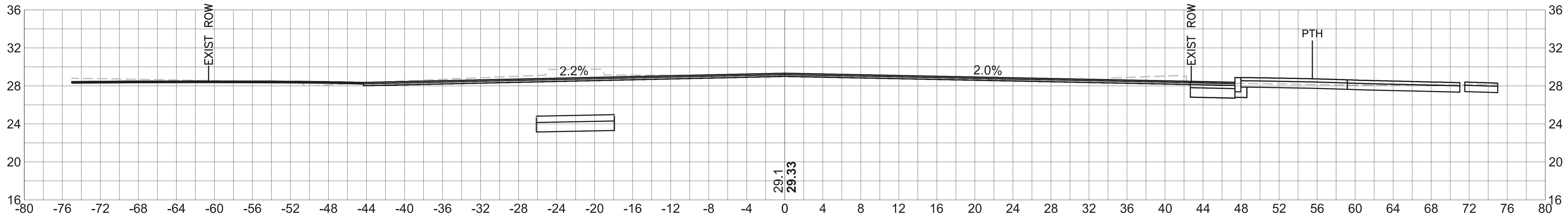
11554-XSECT.DWG 13-Jul-2021

23+00



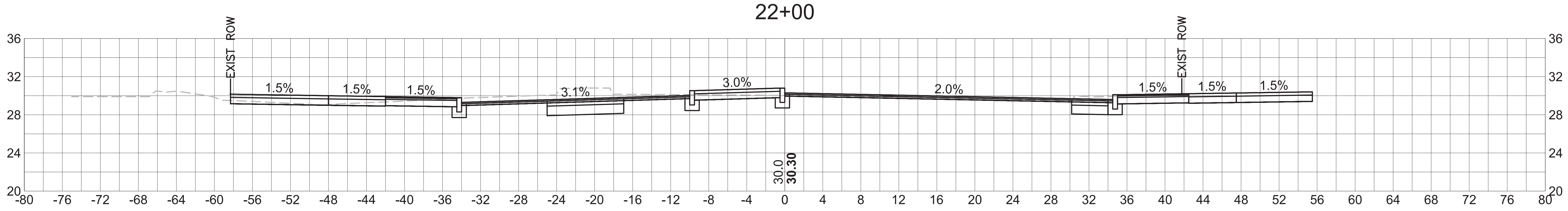
CUT	83.59	SF
FILL	0	SF

22+50



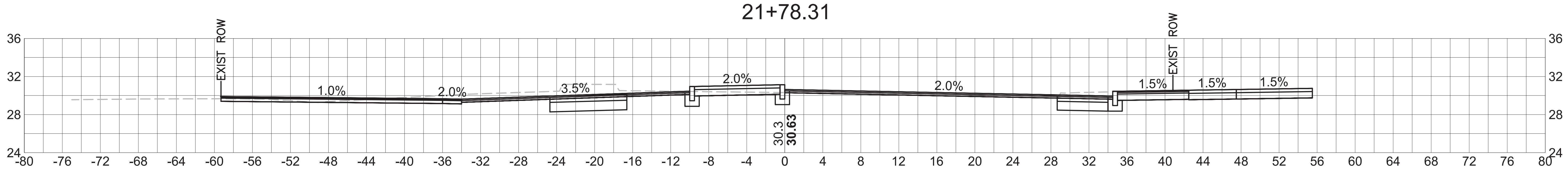
CUT	31.02	SF
FILL	0	SF

22+00



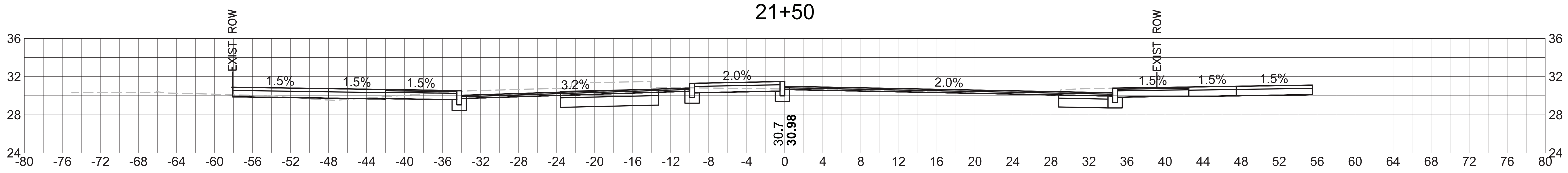
CUT	66.72	SF
FILL	0.0003	SF

21+78.31

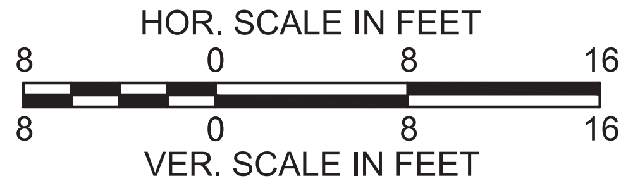


CUT	82.06	SF
FILL	0.12	SF

21+50



CUT	86.57	SF
FILL	1.56	SF

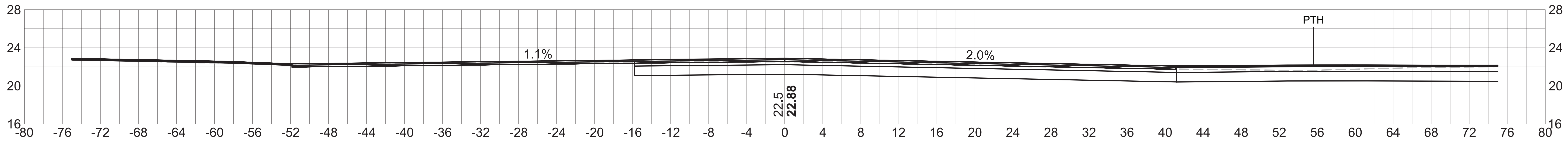


NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 111 OF 120

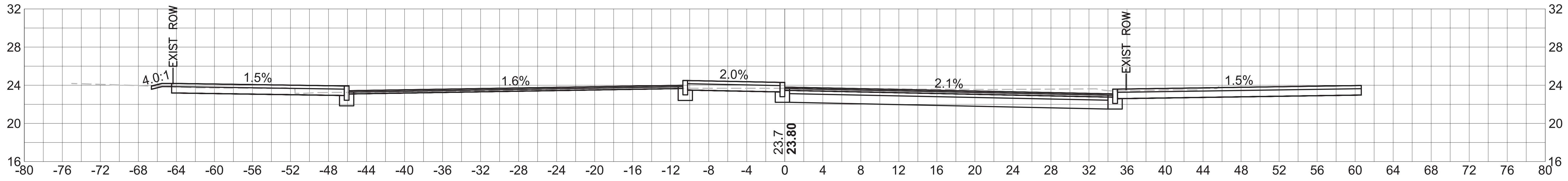
11554-XSECT.DWG 13-Jul-2021

25+00



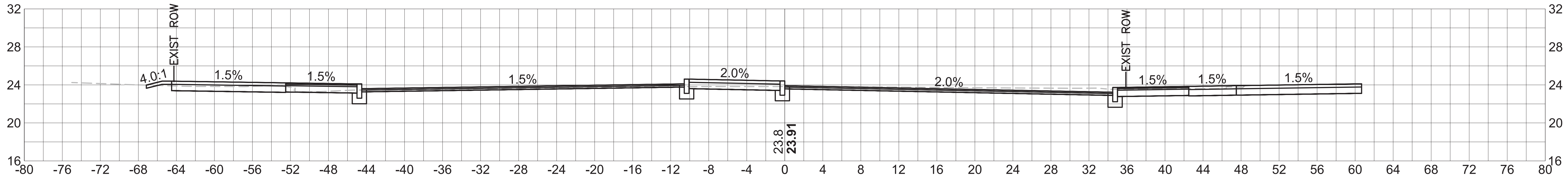
CUT	96.64	SF
FILL	0	SF

24+54.83



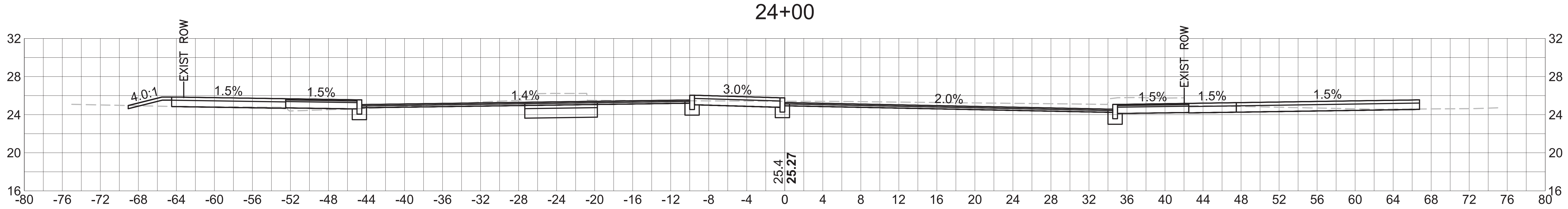
CUT	136.64	SF
FILL	0	SF

24+50



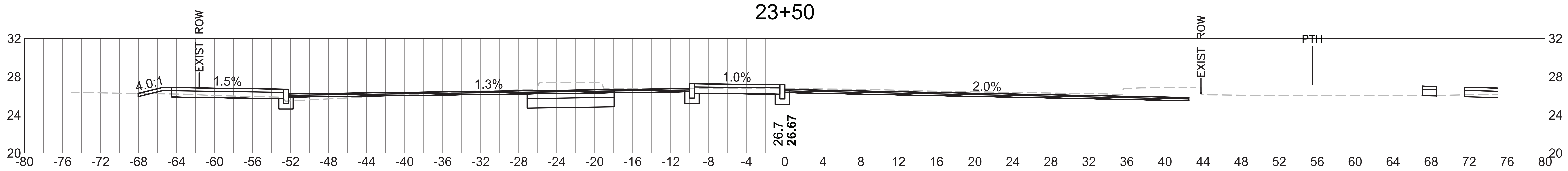
CUT	38.00	SF
FILL	0.17	SF

24+00



CUT	53.09	SF
FILL	2.51	SF

23+50



CUT	64.69	SF
FILL	0.55	SF

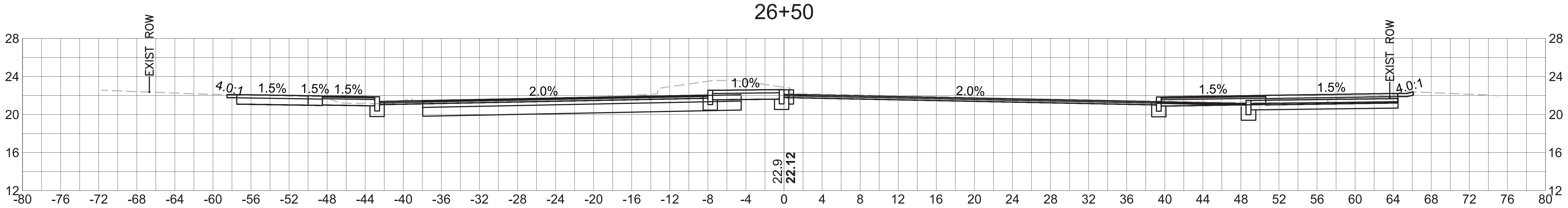
HOR. SCALE IN FEET
8 0 8 16
8 0 8 16
VER. SCALE IN FEET

NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 112 OF 120

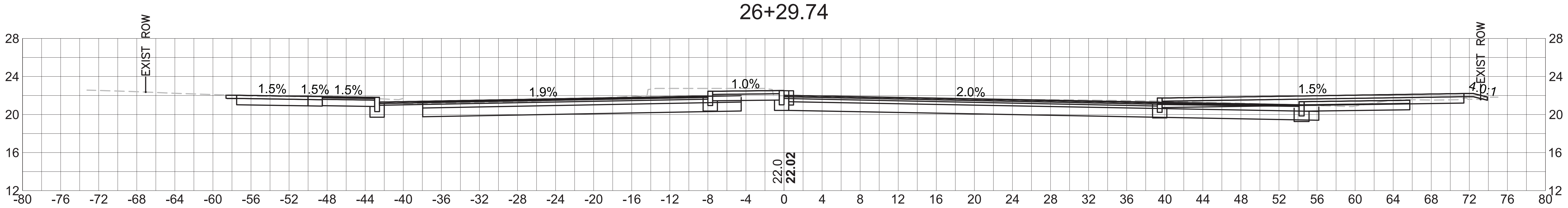
11554-XSECT.DWG 13-Jul-2021

26+50



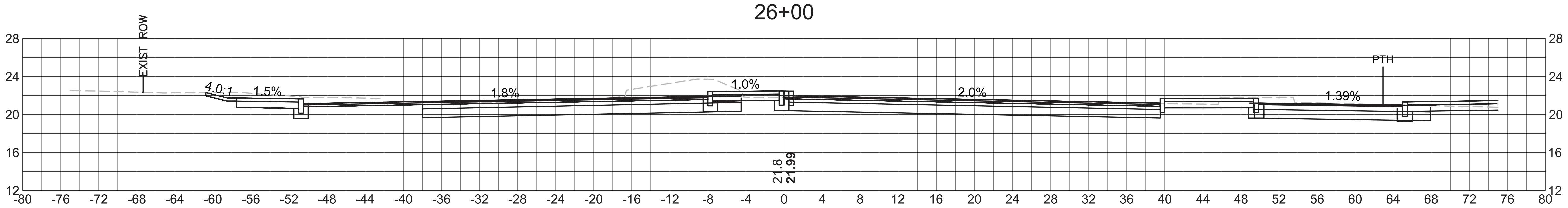
CUT	100.18	SF
FILL	0	SF

26+29.74



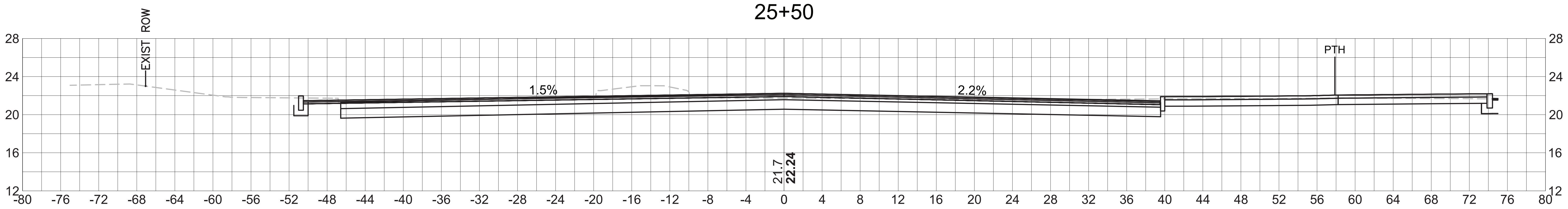
CUT	188.50	SF
FILL	0	SF

26+00



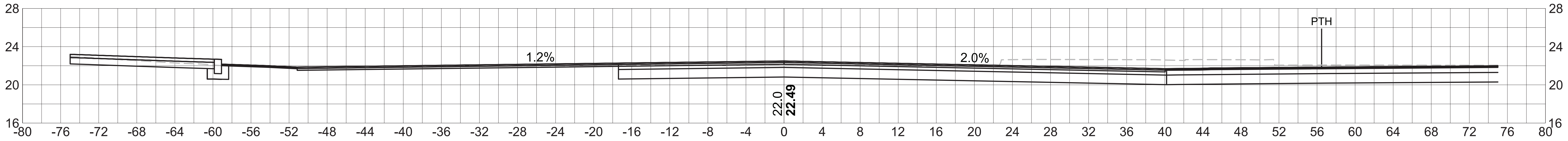
CUT	270.61	SF
FILL	0	SF

25+50



CUT	244.77	SF
FILL	0	SF

25+26.68



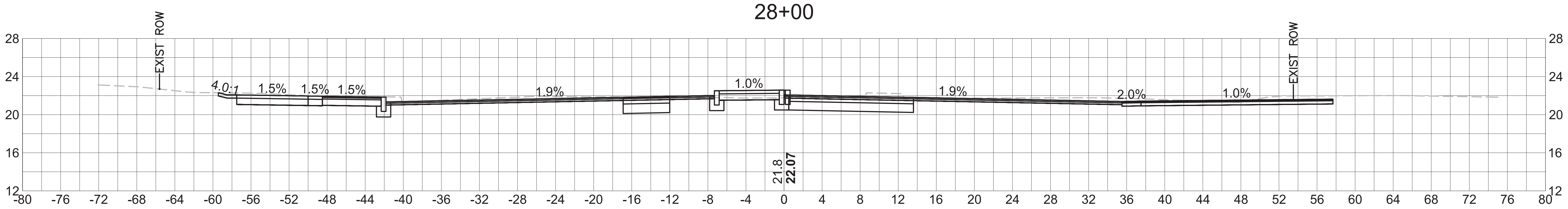
CUT	222.87	SF
FILL	0	SF

NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 113 OF 120

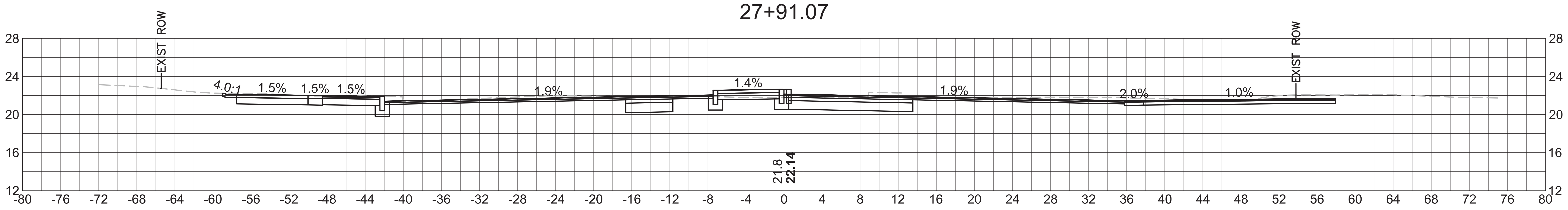
11554-XSECT.DWG 13-Jul-2021

28+00



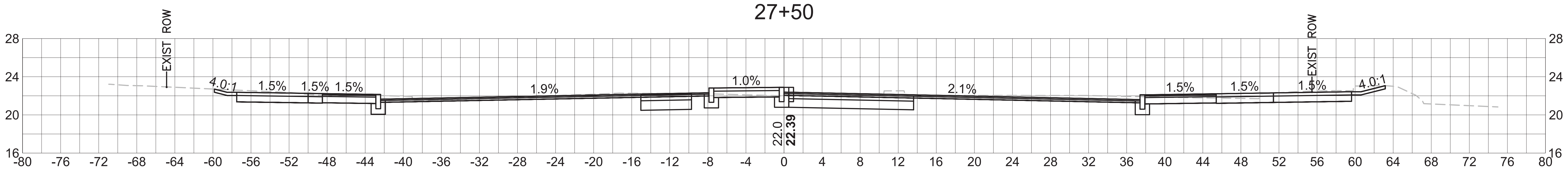
CUT	65.09	SF
FILL	0	SF

27+91.07



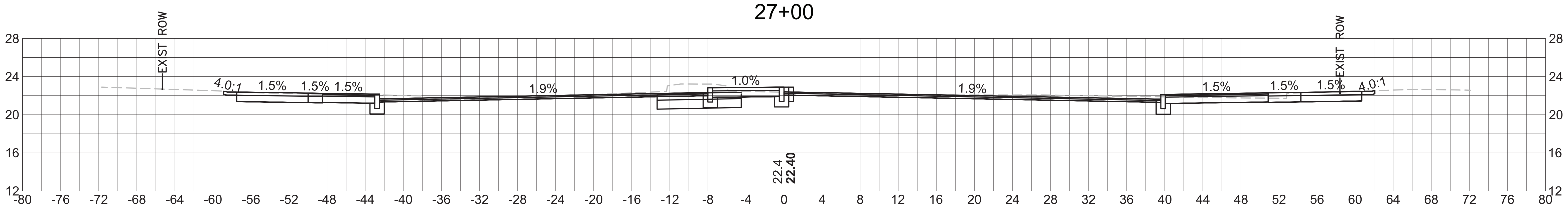
CUT	64.26	SF
FILL	0	SF

27+50



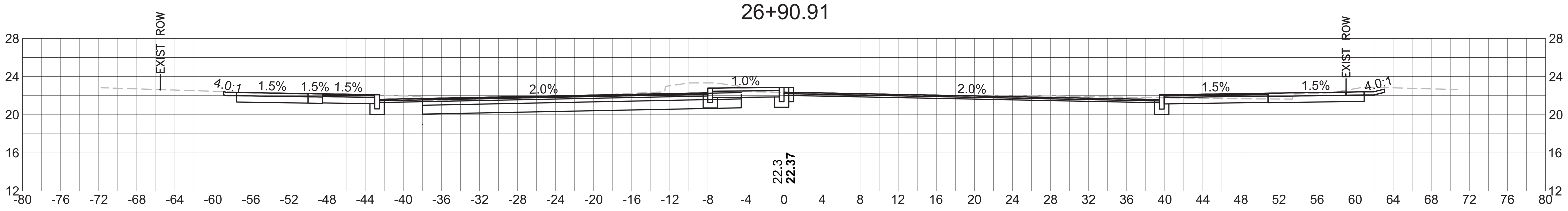
CUT	69.05	SF
FILL	0	SF

27+00



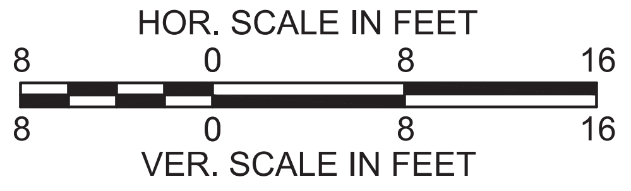
CUT	60.97	SF
FILL	0	SF

26+90.91



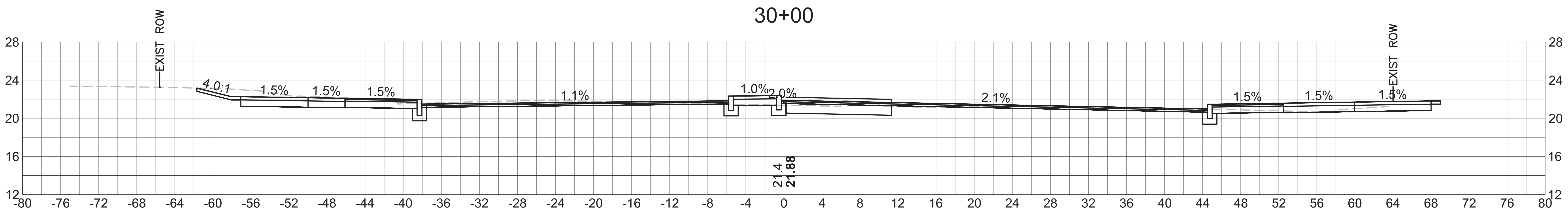
CUT	101.08	SF
FILL	0	SF

NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.



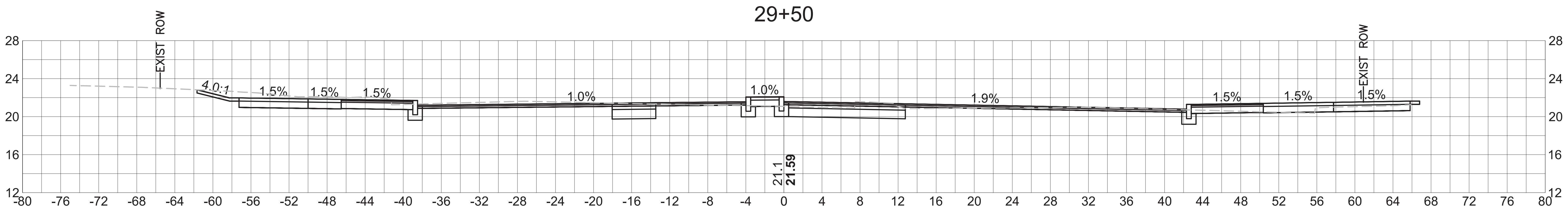
CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 114 OF 120

30+00



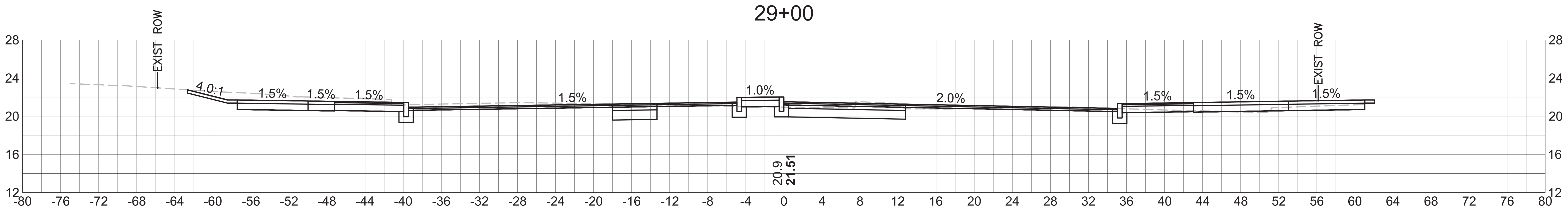
CUT	47.11	SF
FILL	0.0192	SF

29+50



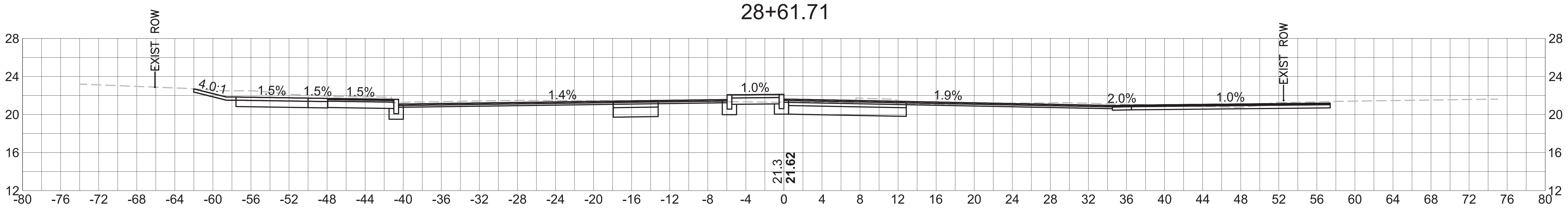
CUT	60.36	SF
FILL	0.17	SF

29+00



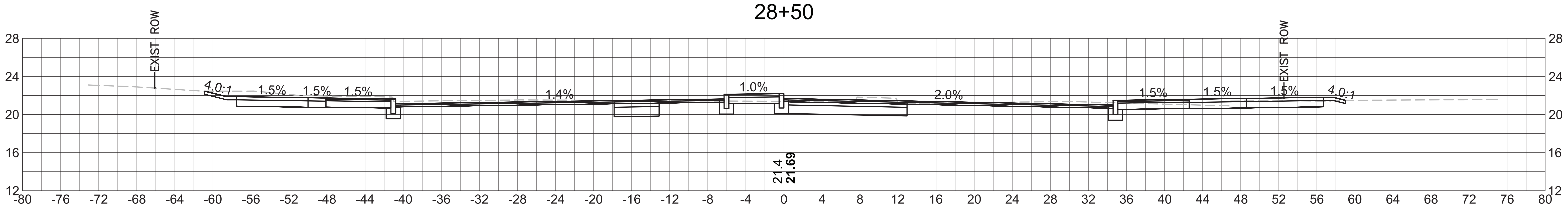
CUT	62.27	SF
FILL	0.45	SF

28+61.71

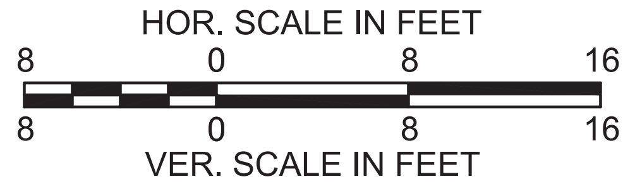


CUT	65.09	SF
FILL	0	SF

28+50



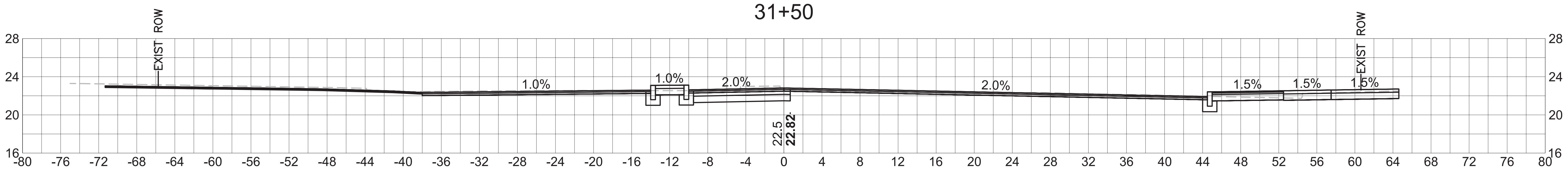
CUT	69.58	SF
FILL	0.05	SF



NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.

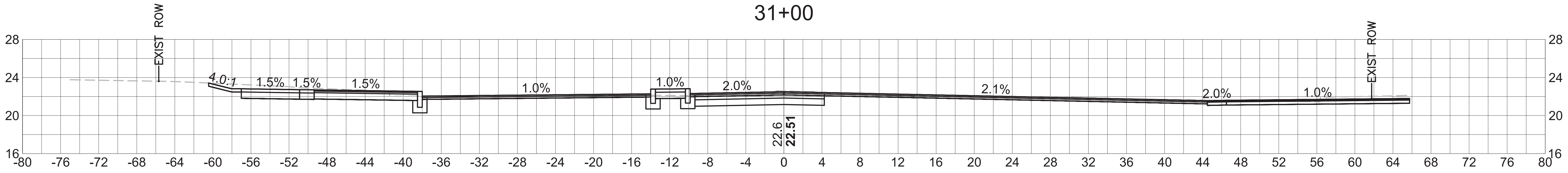
CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 115 OF 120

31+50



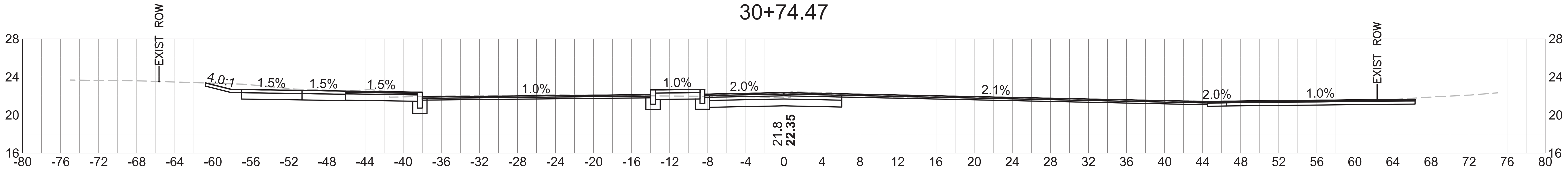
CUT	30.48	SF
FILL	0	SF

31+00



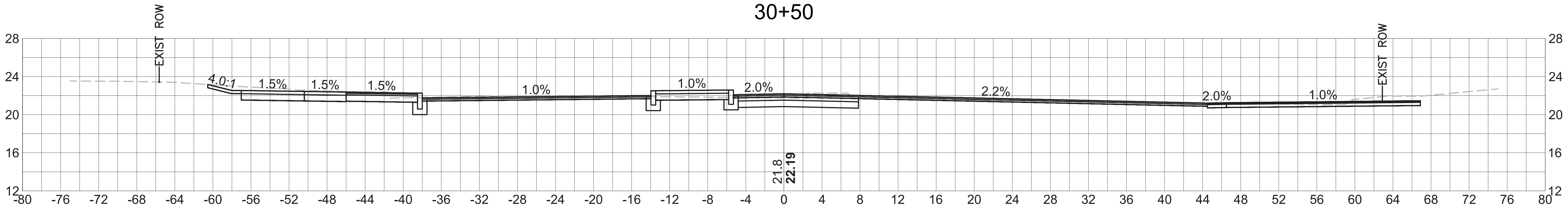
CUT	52.93	SF
FILL	0	SF

30+74.47



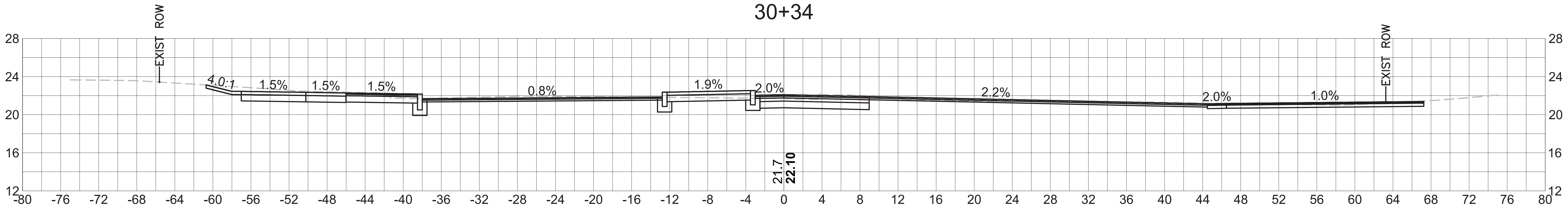
CUT	53.29	SF
FILL	0	SF

30+50



CUT	51.97	SF
FILL	0.0004	SF

30+34



CUT	47.54	SF
FILL	0.0031	SF

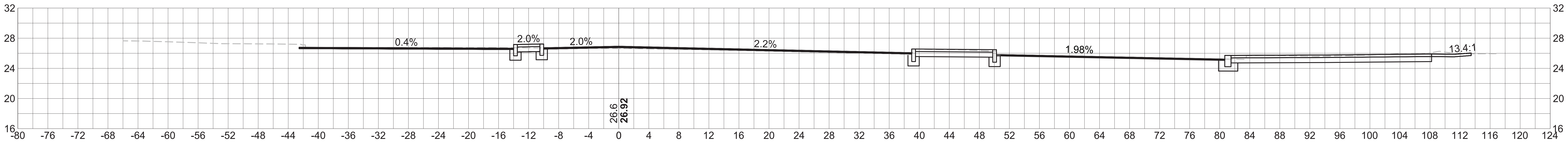
HOR. SCALE IN FEET
8 0 8 16
8 0 8 16
VER. SCALE IN FEET

NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS
SHEET 116 OF 120

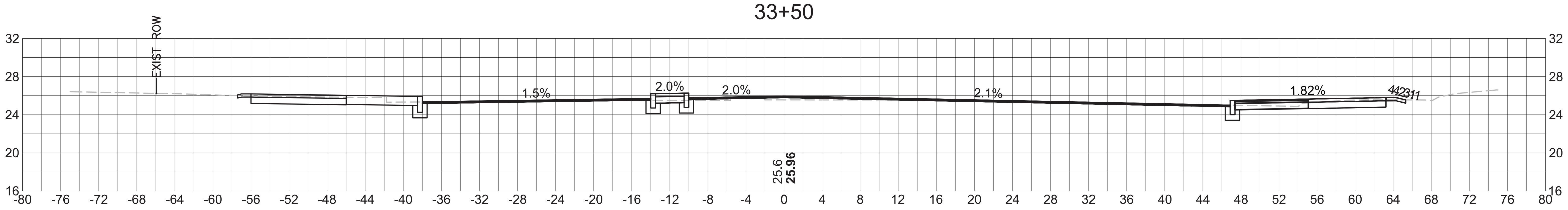
11554-XSECT.DWG 13-Jul-2021

34+00



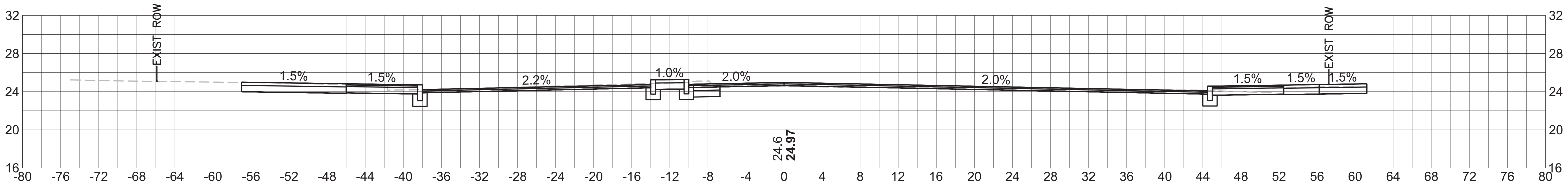
CUT	45.05	SF
FILL	0	SF

33+50



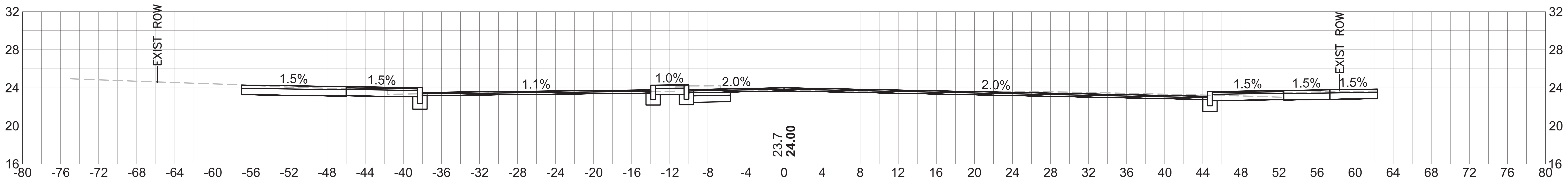
CUT	31.24	SF
FILL	0	SF

33+00



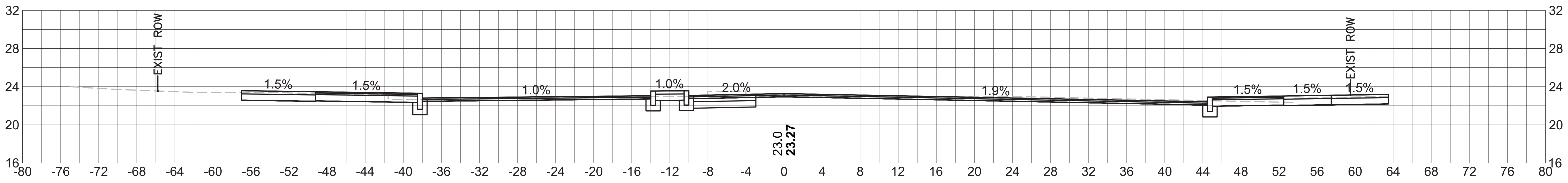
CUT	38.41	SF
FILL	0.00	SF

32+50

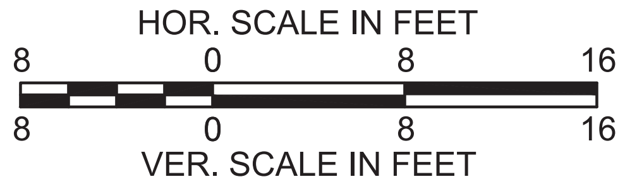


CUT	39.24	SF
FILL	0.00	SF

32+00



CUT	42.76	SF
FILL	0	SF



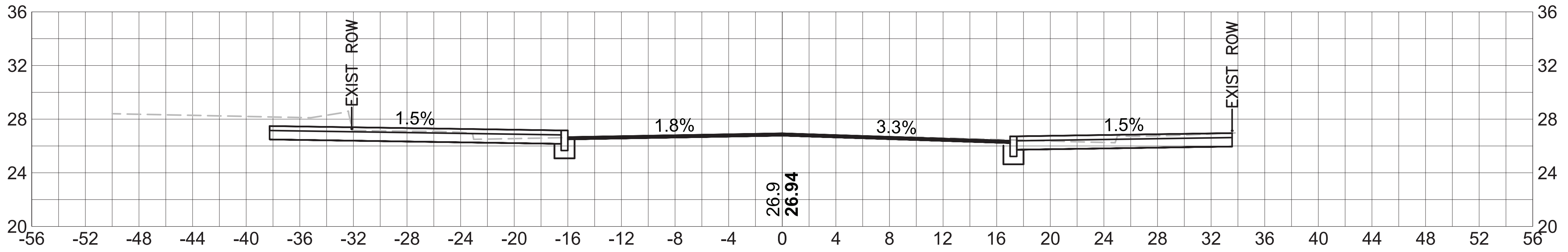
NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS - CAMBRIDGE STREET
SHEET 117 OF 120

13-Jul-2021
11554-XSECT.DWG

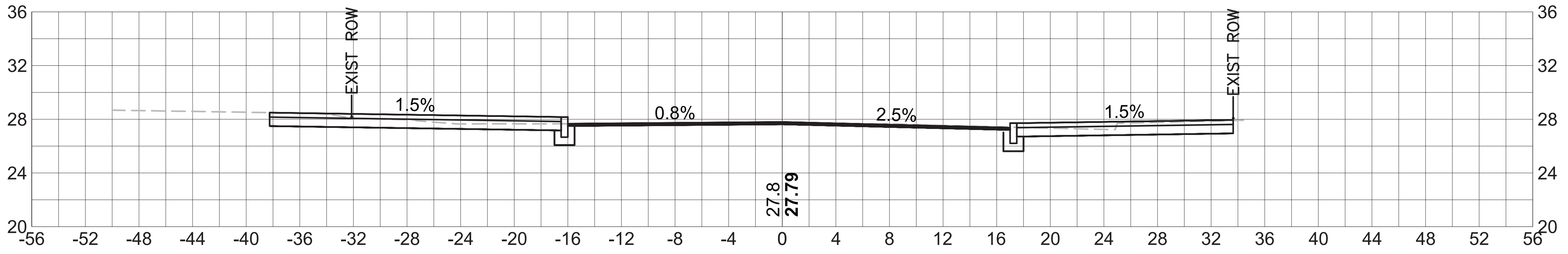
CUT	38.65	SF
FILL	0	SF

603+50



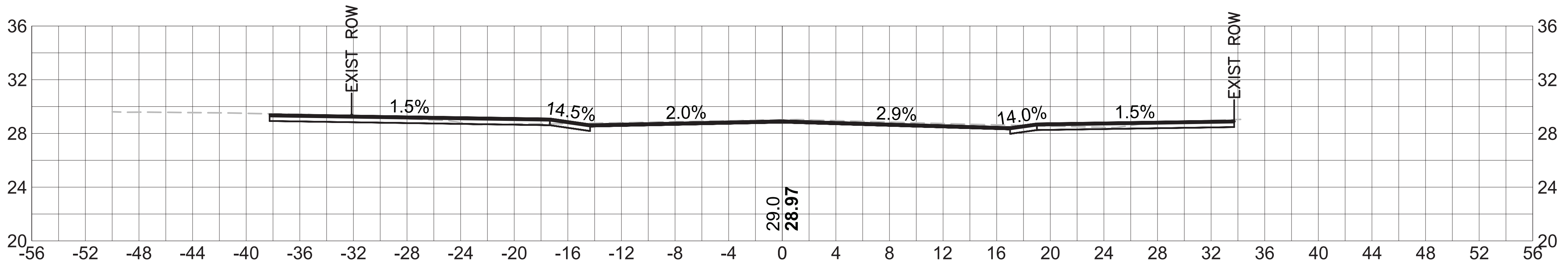
CUT	30.87	SF
FILL	0	SF

603+00



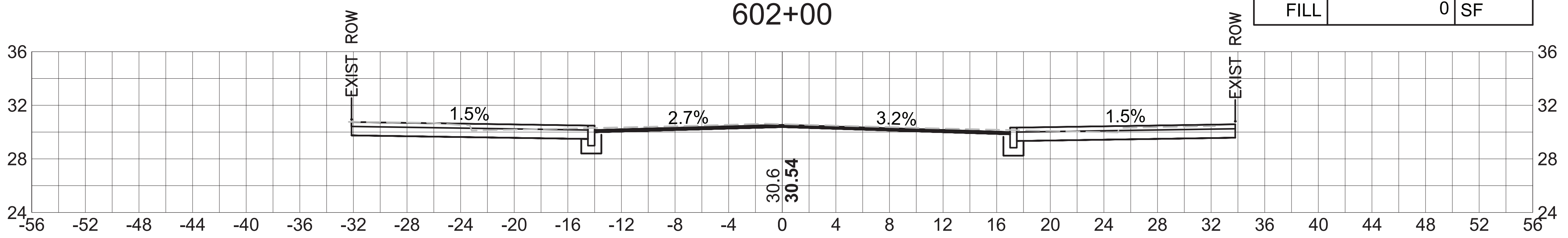
CUT	7.55	SF
FILL	0	SF

602+50



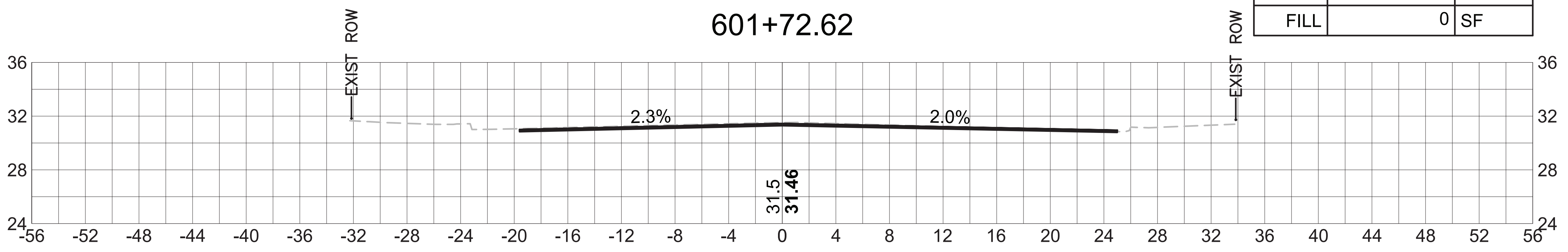
CUT	0	SF
FILL	0	SF

602+00



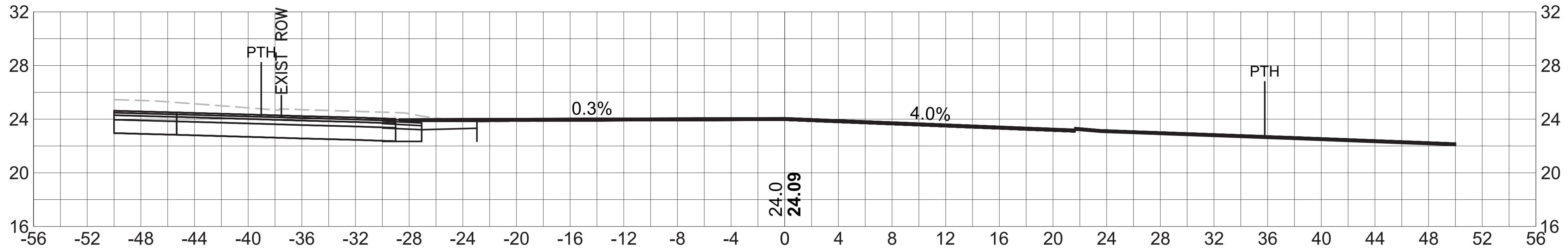
CUT	0	SF
FILL	0	SF

601+72.62



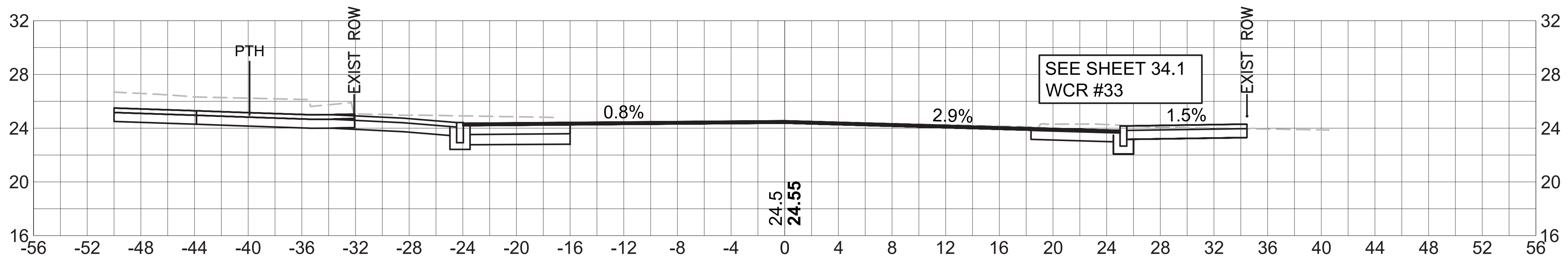
CUT	33.95	SF
FILL	0	SF

606+00



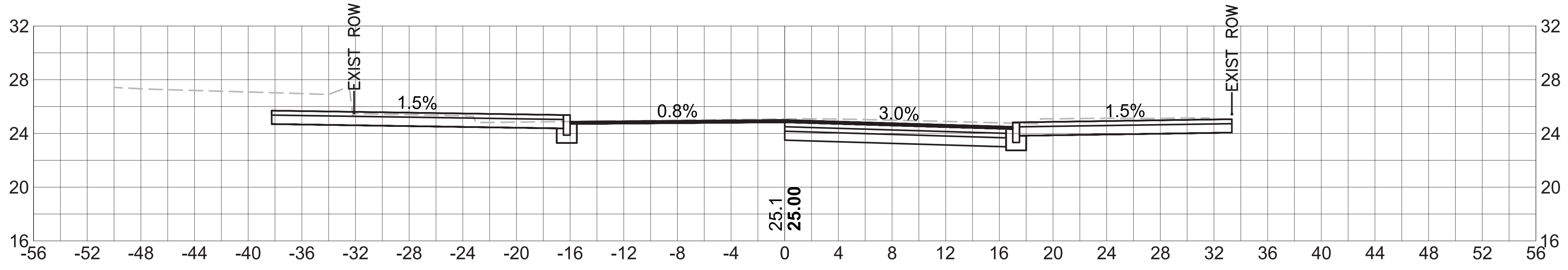
CUT	66.74	SF
FILL	0	SF

605+50



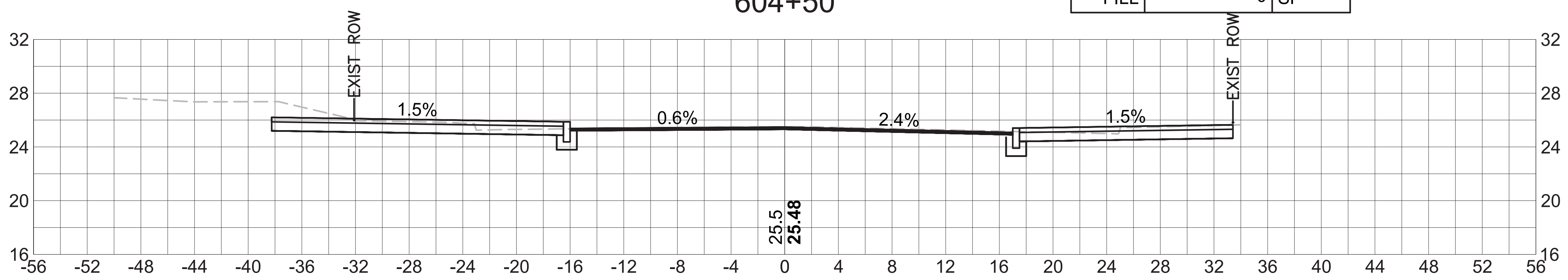
CUT	83.44	SF
FILL	0	SF

605+00



CUT	43.14	SF
FILL	0	SF

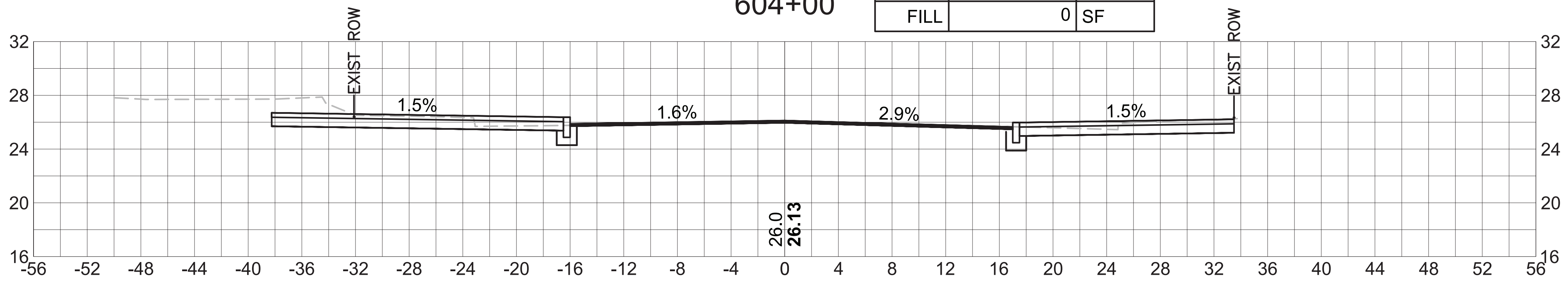
604+50



NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.

CUT	39.14	SF
FILL	0	SF

604+00

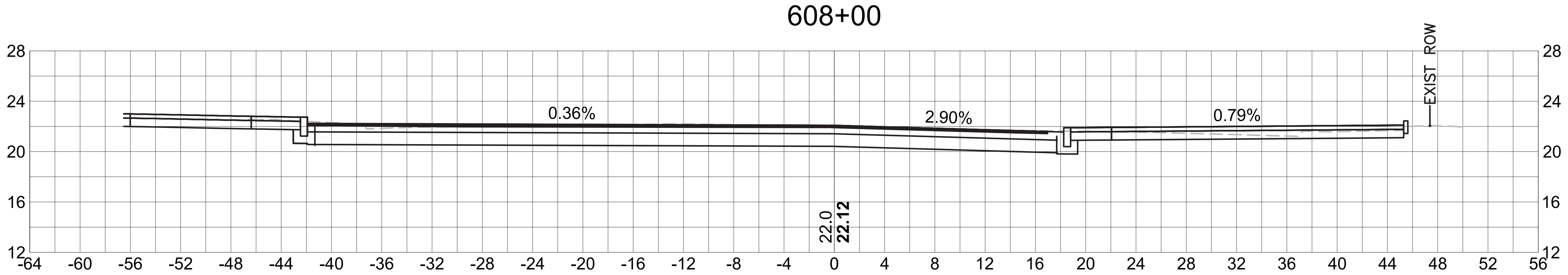


0 8 16 24 32
SCALE: 1" = 8'

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS - CAMBRIDGE STREET
SHEET 118 OF 120

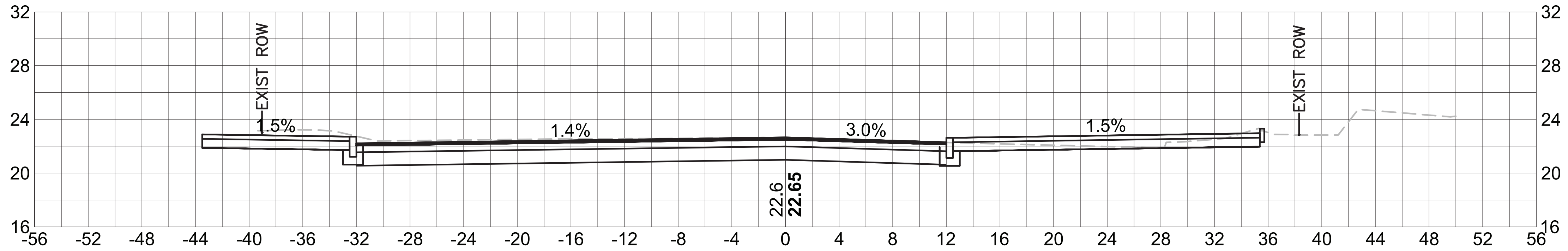
11554-XSECT.DWG 13-Jul-2021

608+00



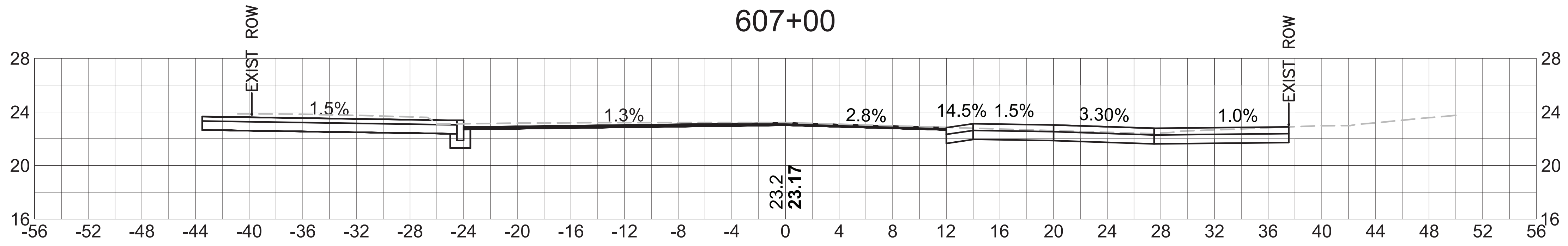
CUT	116.90	SF
FILL	0	SF

607+50



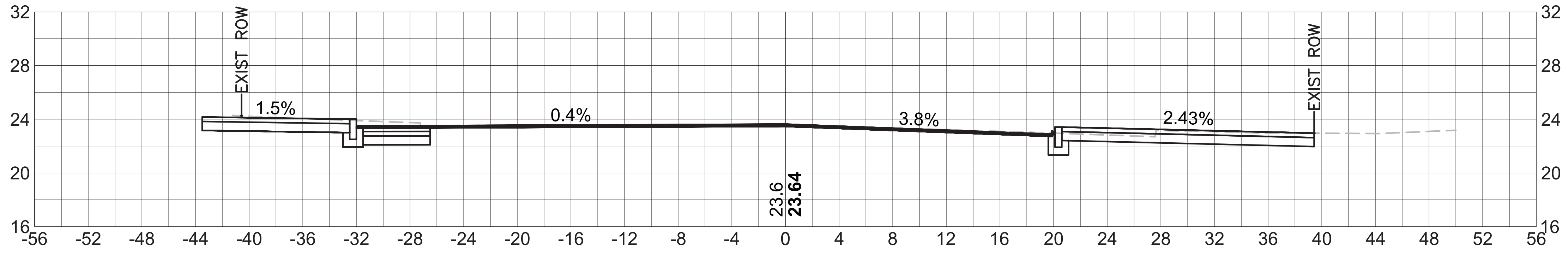
CUT	86.58	SF
FILL	0	SF

607+00

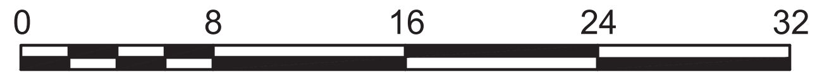


CUT	45.39	SF
FILL	0.016	SF

606+50



CUT	37.64	SF
FILL	0	SF



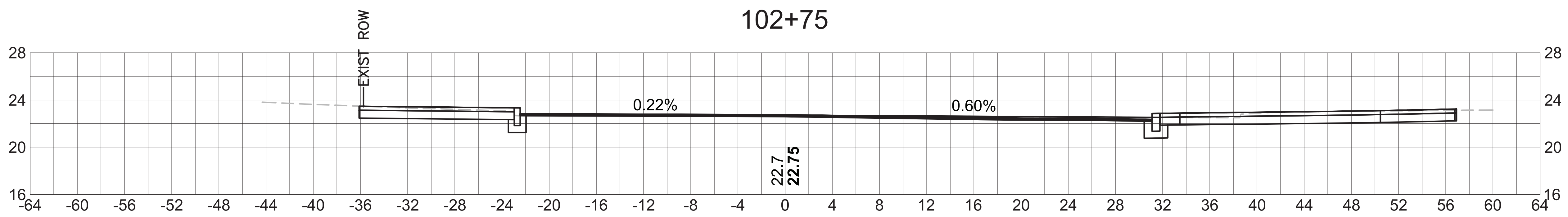
SCALE: 1" = 8'

NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS - FIRST STREET
SHEET 119 OF 120

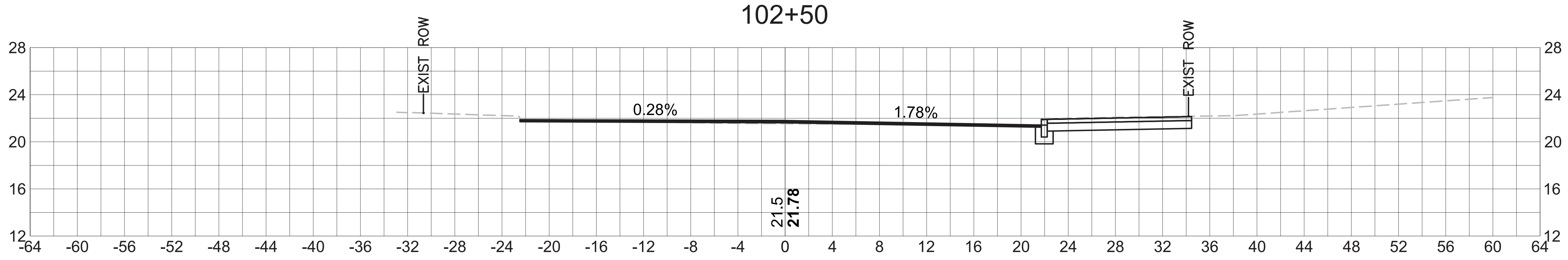
11554-XSECT.DWG
13-Jul-2021

102+75



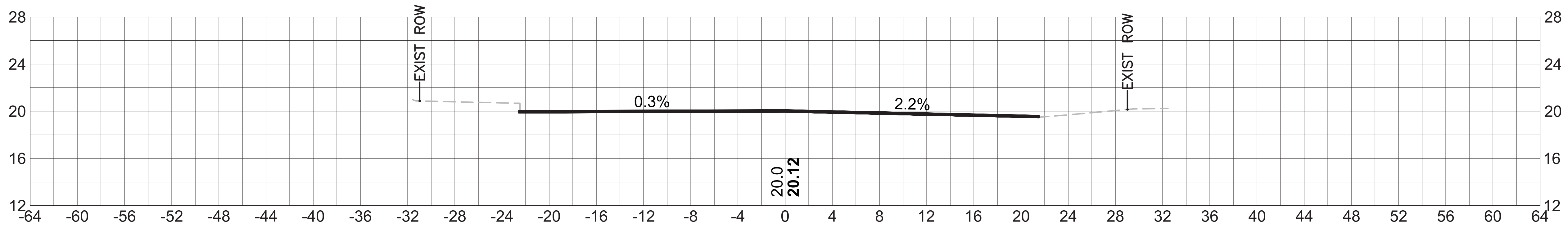
CUT	38.47	SF
FILL	0	SF

102+50



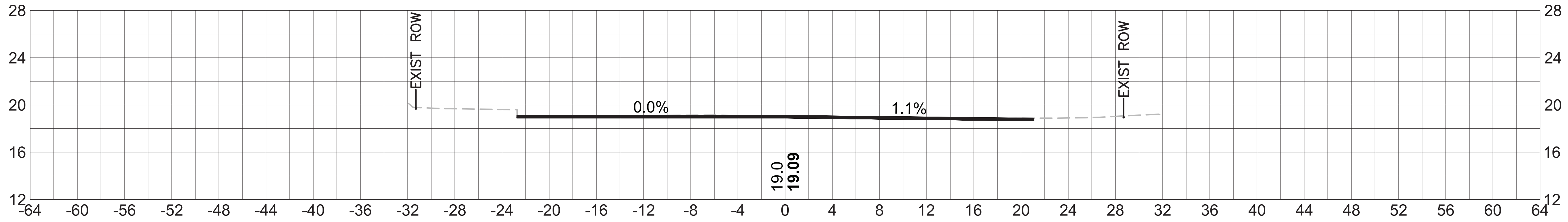
CUT	14.68	SF
FILL	0	SF

102+00



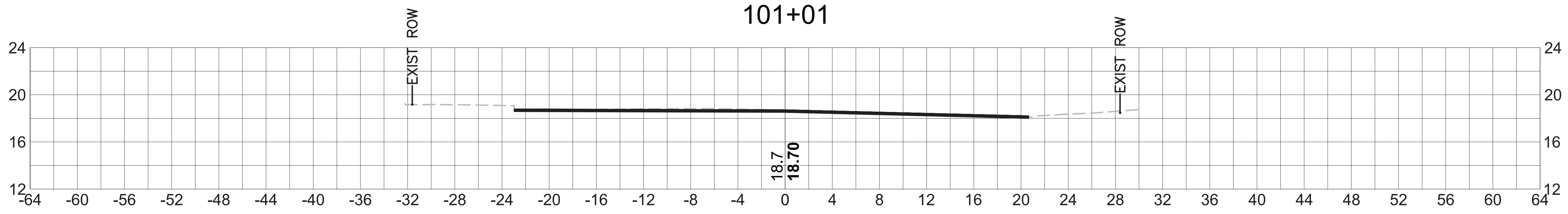
CUT	0	SF
FILL	0	SF

101+50

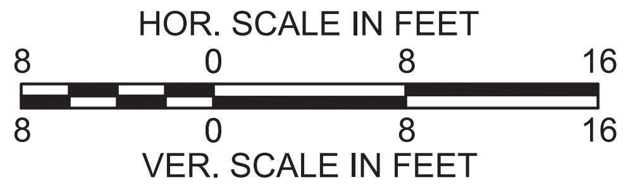


CUT	0	SF
FILL	0	SF

101+01



CUT	0	SF
FILL	0	SF

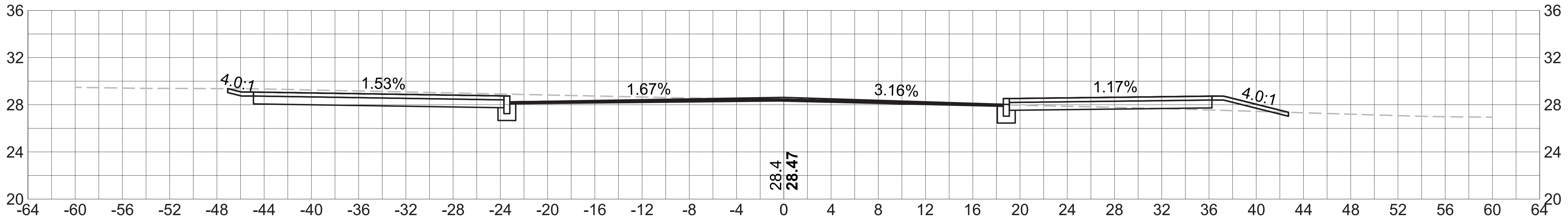


NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.

CAMBRIDGE
O'BRIEN HIGHWAY
CROSS SECTIONS - FIRST STREET
SHEET 120 OF 120

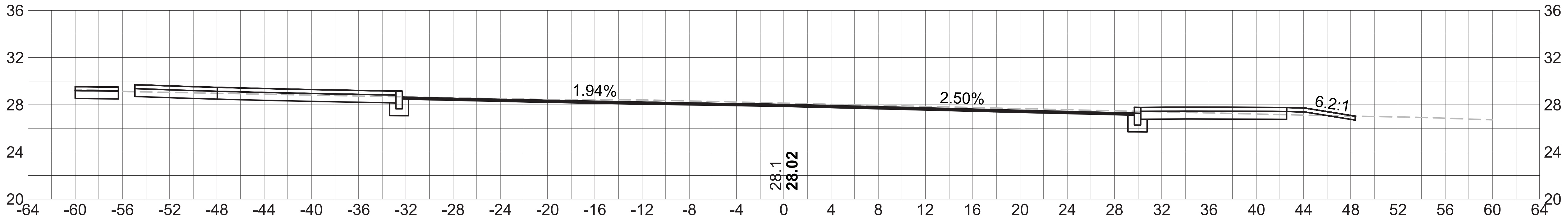
13-Jul-2021
11554-XSECT.DWG

106+00



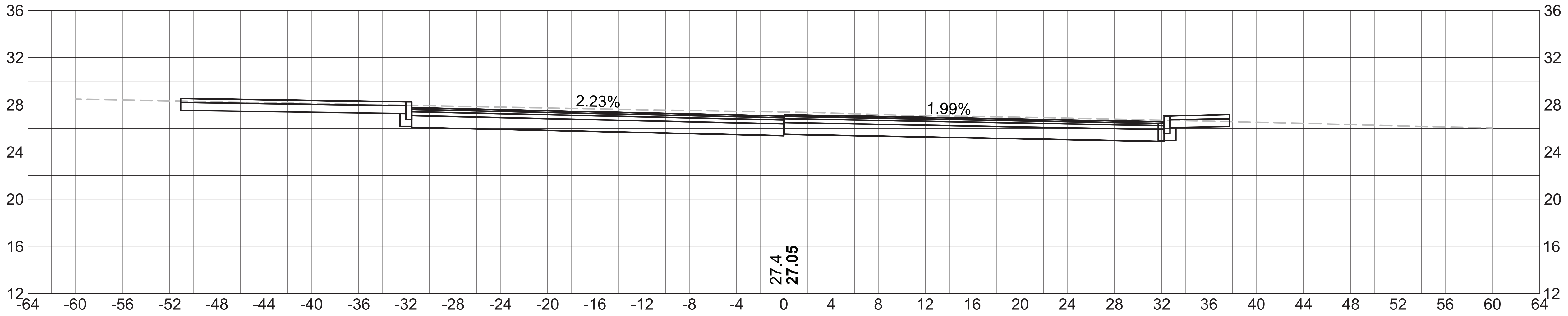
CUT	34.67	SF
FILL	2.97	SF

105+75



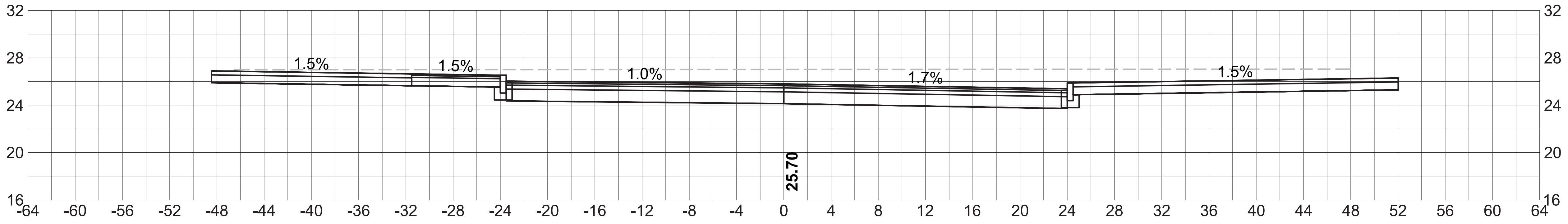
CUT	39.20	SF
FILL	0.69	SF

104+50



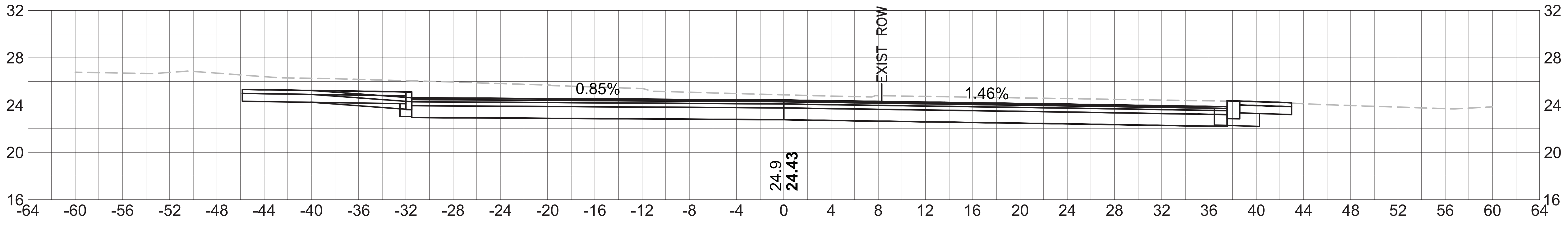
CUT	135.06	SF
FILL	0	SF

104+00



CUT	234.45	SF
FILL	0	SF

103+50



CUT	227.06	SF
FILL	0	SF

NOTES:
1. SEE SHEET 97 - 98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.